

Snake River - Hells Canyon Total Maximum Daily Load (TMDL)

**Section 6.0 General Water Quality
Management and Implementation Plans**



6.0 Snake River – Hells Canyon TMDL General Water Quality Management and Implementation Plans

The Snake River - Hells Canyon (SR-HC) Total Maximum Daily Load (TMDL) is a joint effort between the Idaho Department of Environmental Quality (IDEQ) and the Oregon Department of Environmental Quality (ODEQ), with participation by the US Environmental Protection Agency (US EPA) and local stakeholders.

The purpose of this water quality management plan document is to act as a general outline for implementation of the SR-HC TMDL. This TMDL has been prepared as a bi-state process between Idaho and Oregon.

To fulfil the requirements of the State of Oregon TMDL process, an implementation plan must be submitted to the US EPA with the SR-HC TMDL. IDEQ guidance states that a TMDL implementation plan should be developed within eighteen months of the approval of the TMDL it is intended to support and supplement. Because of this difference in procedure, this general plan is being submitted with the SR-HC TMDL and other, more specific implementation plans will be prepared and submitted according to the appropriate IDEQ or ODEQ procedure.

This general document is being submitted to fulfill the requirements of the TMDL process. However, substantial differences in state procedure and policy for implementation of TMDLs exist between Oregon and Idaho. Therefore, this document contains two separate, state-specific plans:

- The State of Oregon General Water Quality Management plan (Section 6.1), and
- The State of Idaho General Implementation Plan (Section 6.2)

Together, these documents represent the general water quality management plan (implementation plan) for the SR-HC TMDL.

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6.1 State of Oregon General Water Quality Management Plan

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Oregon Snake River – Hells Canyon

Water Quality Management Plan (WQMP)

Prepared by: Oregon Department of Environmental Quality
July 2003



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CHAPTER 1 - INTRODUCTION

The Snake River - Hells Canyon (SR-HC) Subbasin Total Maximum Daily Loads (TMDLs) were developed by the Oregon Department of Environmental Quality and the Idaho Department of Environmental Quality. The Oregon Snake River - Hells Canyon Water Quality Management Plan (WQMP), prepared by the Oregon Department of Environmental Quality, is intended to describe strategies for how the SR-HC Subbasin Total Maximum Daily Loads (TMDLs) will be implemented and achieved in the State of Oregon. It includes a description of activities, programs, legal authorities, and other measures for which ODEQ, which regulates industrial and municipal point sources, and the subbasin's designated management agencies (DMAs), which regulate all other sources of pollution, have regulatory responsibilities. This WQMP is the overall framework describing the management efforts to implement the Snake River - Hells Canyon Subbasin TMDLs.

A separate plan describing how SR-HC TMDLs will be implemented and achieved in the State of Idaho has been prepared by the Idaho Department of Environmental Quality.

The Oregon point sources and DMAs named in the Snake River - Hells Canyon Subbasin TMDLs are or will be developing preliminary site and source specific Implementation Plans (IPs). For point sources, IPs will be in the form of source-specific facility plans. All IPs will be submitted within 18 months of this TMDL being approved by the US Environmental Protection Agency. These IPs, when complete, are expected to fully describe point source and DMA efforts to achieve their appropriate allocations, and ultimately, water quality standards. Since DMAs will require time to fully develop IPs once the TMDLs are finalized, the first iteration of their IPs are not expected to completely describe all necessary management efforts.

Appended to this document are completed Oregon DMA IPs for forestlands, agricultural lands, transportation systems, and public lands within the SR-HC subbasin. These plans describe each DMA's existing or planned efforts to implement their portion of the TMDLs. Point source IPs will be added as they are completed. This relationship is presented schematically in Figure 1, below.

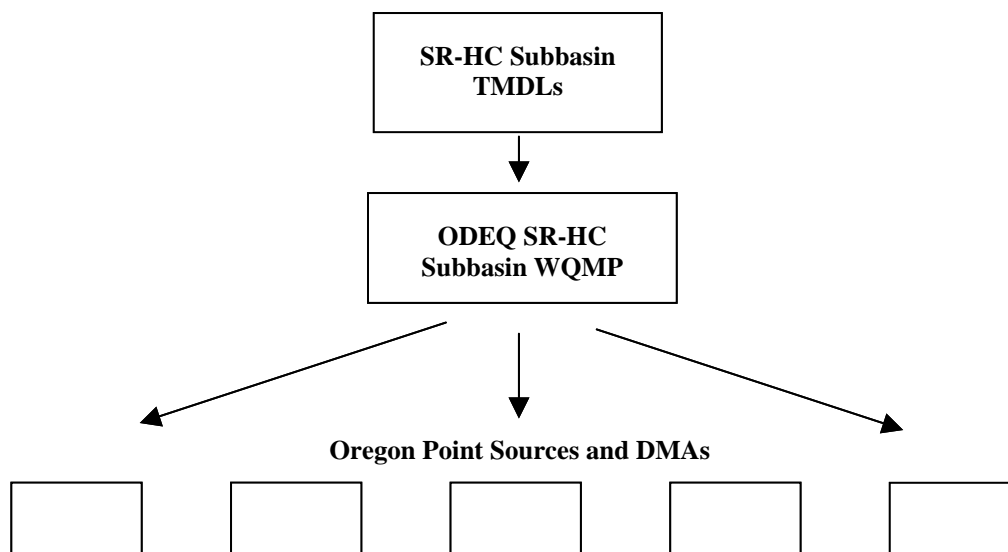


Figure 1 : TMDL/WQMP/Implementation Plan (IP) Schematic

ODEQ recognizes that TMDL implementation is critical to the attainment of water quality standards. Additionally, the support of point sources and DMAs in TMDL implementation is essential. In instances where ODEQ does not have direct authority for implementation, they will work with DMAs to ensure attainment of the TMDL allocations and, ultimately, water quality standards. Where ODEQ has direct authority, such as in issuing permits to point sources, they will use that authority to ensure attainment of the TMDL allocations and water quality standards.

This document is the first iteration of the Oregon Water Quality Management Plan (WQMP) for Snake River - Hells Canyon Subbasin TMDLs. As explained in “Element 6” of this document, DMA-specific IPs will be more fully developed once the current TMDLs are submitted to the U. S. Environmental Protection Agency (EPA) and approved. This WQMP will establish proposed timelines (following final TMDL approval) to develop full point source and DMA IPs. ODEQ will work cooperatively in the development of TMDL IPs and will assure that the plans adequately address the elements described below under “TMDL Water Quality Management Plan Guidance”.

ODEQ recognizes that meeting TMDLs in the SR-HC subbasin may be economically challenging. Therefore, the State of Oregon will make every effort possible to minimize economic impacts required to meet TMDLs while at the same time complying with state and federal regulations intended to protect water quality.

The Relationship Between SR-HC TMDLs, WQMP, and IPs

The goal of the Clean Water Act and associated Oregon administrative rules is that water quality standards shall be met or that all feasible steps will be taken towards achieving the highest water quality attainable. This is a long-term goal in many watersheds, particularly where non-point sources are the main concern. To achieve this goal, implementation must commence as soon as possible.

Total Maximum Daily Loads (TMDLs) are numerical loadings that are set to limit pollutant levels such that in-stream water quality standards are met and designated beneficial uses, such as fishing, swimming, and recreation, are supported. ODEQ recognizes that TMDLs are values calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical and biological processes. Models and some other analytical techniques are simplifications of these complex processes and, while they are useful in interpreting data and in predicting trends in water quality, they are unlikely to produce an exact prediction of how streams and other waterbodies will respond to the application of various management measures. It is for this reason that the TMDL has been established with a margin of safety.

For the purposes of the Snake SR-HC TMDL, this general Water Quality Management Plan (WQMP) will be submitted to EPA as part of the TMDL document. Following this submission, in accordance with approved state schedules and protocols, specific point source and DMA Implementation Plans (IPs) will be prepared for all Oregon pollutant sources. IPs available at the completion of the TMDL will be referenced in the WQMP. Appropriate agencies and/or entities as designated by the state will assist in the development and oversight of the specific plans. IPs will be designed to reduce pollutant loads to meet the TMDLs established for listed pollutants.

It is ODEQ’s initial expectation that point sources will meet their specific waste load allocations in five years or sooner if feasible. During this time frame each point source will prepare a facilities plan (Implementation Plan - IP) that will investigate alternative methods for meeting waste load allocations. If a point source’s IP documents that achieving waste load allocations within the five-year time frame is not feasible, the point source may request an extension.

ODEQ recognize it may take some period of time – from several years to several decades – to fully implement the appropriate non-point source management practices. ODEQ also recognizes that it may take additional time after implementation has been accomplished before the management practices identified in the WQMP or DMA IPs become fully effective in reducing and controlling pollution. In addition, ODEQ recognizes that technology for controlling nonpoint source pollution is, in many cases, in the development

stages and will likely take one or more iterations to develop effective techniques. It is possible that after application of all reasonable best management practices, some TMDLs or their associated targets and surrogates cannot be achieved as originally established. ODEQ further recognizes that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated targets and surrogates. Such events could be, but are not limited to floods, fire, insect infestations, and drought. In these kinds of situations, if a non-point source that is covered by the TMDLs complies with its IP, it will be considered in compliance with the TMDL.

For some pollutants in the Snake River - Hells Canyon TMDLs, pollutant surrogates have been defined as alternative targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human access or activity in the basin or its riparian areas. It is the expectation, however, that the WQMP and associated IPs will address how human activities will be managed to achieve the water quality targets and surrogates. It is also recognized that full attainment of pollutant surrogates at all locations may not be feasible due to physical, legal, or other regulatory constraints. To the extent possible IPs should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise.

ODEQ intends to regularly review progress of this WQMP and its IPs to achieve TMDLs. If and when ODEQ determines the WQMP and the associated IPs have been fully implemented, that all feasible management practices have reached maximum expected effectiveness, and that a TMDL or its interim targets have still not been achieved, ODEQ shall reopen the TMDL and adjust it or its interim targets and the associated water quality standard(s) as necessary.

The implementation of TMDLs and the associated IPs are enforceable under the applicable provisions of the water quality standards by ODEQ, which regulates point sources, and by other State of Oregon agencies and local governments (DMAs), which regulate non-point sources. However, it is envisioned that sufficient initiative exists on the part of local stakeholders to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that ODEQ or the responsible agency (DMA) will work with point sources or land managers to overcome impediments to progress through education, technical support or enforcement. Enforcement may be necessary in instances of insufficient action towards progress. This could occur through direct intervention from state or local DMAs or ODEQ. The latter may be based on departmental orders to implement management goals leading to water quality standards.

If a source is not given a load allocation, it does not necessarily mean that the source is prohibited from discharging any wastes. A source may be permitted to discharge by ODEQ if the source can adequately demonstrate that the discharge will not have a significant impact on water quality over that achieved by a zero allocation. For instance, a permit applicant may be able to demonstrate that a proposed thermal discharge would not have a measurable detrimental impact on projected stream temperatures when site temperature is achieved. Alternatively, in the case where a TMDL is set based upon attainment of a specific pollutant concentration, a source may be permitted to discharge at that concentration and still be considered as meeting a zero allocation.

Adaptive Management

In employing an adaptive management approach to the TMDLs, the WQMP, and the associated IPs, ODEQ has the following expectations and intentions:

- * Subject to available resources, ODEQ intends to review the progress of the TMDLs, WQMP, and the associated IPs, on a five-year basis.

- * In conducting this review, ODEQ will evaluate the progress towards achieving the TMDLs (and water quality standards) and the success of implementing the WQMP and associated IPs.

- * ODEQ expects that point sources and designated management or oversight agencies (DMAs) in Oregon will also monitor and document their progress in implementing the provisions of the IPs for those pollutant

sources for which they are responsible. This information will be provided to ODEQ for use in reviewing the TMDL.

* ODEQ expects that point sources and DMAs will identify benchmarks for the attainment of TMDL targets and surrogates as part of IP development. As implementation of the WQMP and the associated IPs proceeds, these established benchmarks will be used to measure progress toward the goals outlined in the SR-HC TMDL.

* Where implementation of the IPs or effectiveness of management techniques are found to be inadequate, ODEQ expects point sources and DMAs to revise the components of IPs to address these deficiencies.

* If ODEQ, in consultation with point sources and DMAs, conclude that all feasible steps have been taken to meet the TMDL and its associated targets and surrogates, and that the TMDL, or the associated targets and surrogates are not practicable, the TMDL may be reopened and revised as appropriate. ODEQ will also consider reopening the TMDL should new information become available indicating that the TMDL or its associated targets and/or surrogates should be modified.

Effluent Trading

ODEQ recognizes the desire of stakeholders to equalize the economic burden of meeting the TMDL. One way to achieve this is to allocate loads based upon costs so that everyone pays the same per unit of reduction. Unfortunately, there is insufficient time and information to base allocations on equal cost. This could only be done after each allocated source completed a facilities plan to determine various means and the associated costs of reducing loads.

Instead ODEQ recommends that point and non-point source DMAs expand their planning efforts to consider means and costs of reducing their loads further than necessary to meet allocations. Sources could then market their additional load reductions to others and, if their load reductions were cheaper to achieve, sell them. ODEQ is willing to adjust allocations after the TMDL is established provided the parties involved have enforceable contracts, permits, or other instruments to ensure that effluent trades can and will be implemented.

CHAPTER 2 - TMDL WATER QUALITY MANAGEMENT PLAN **GUIDANCE**

In February 2000, ODEQ entered into a Memorandum of Agreement (MOA) with the U.S. Environmental Protection Agency (EPA) that describes the basic elements needed in a TMDL Water Quality Management Plan (WQMP). That MOA was endorsed by the Courts in a Consent Order signed by United States District Judge Michael R. Hogan in July 2000. The elements of this agreement, as outlined below, will serve as the framework for this WQMP.

WQMP Elements

1. Condition assessment and problem description
2. Goals and objectives
3. Identification of responsible participants
4. Proposed management measures
5. Timeline for implementation
6. Reasonable assurance

7. Monitoring and evaluation
8. Public involvement
9. Costs and funding
10. Citation to legal authorities

This Snake River - Hells Canyon Subbasin WQMP is organized around these plan elements and is intended to fulfill the requirement for a management plan contained in OAR 340-041-0745.

CHAPTER 3 – CONDITION ASSESSMENT AND PROBLEM DESCRIPTION

Geographic Region of Interest

The Snake River Basin includes areas of Idaho, Nevada, Oregon, Utah, Washington and Wyoming. The Snake River is the 10th longest river system in the United States, extending over 1000 miles from its headwaters in Yellowstone National Park, Wyoming, to its confluence with the Columbia River near Pasco, Washington. The Snake River is the major tributary in the Columbia River system. It drains about 87 percent of the State of Idaho (about 73,000 square miles) and approximately 17 percent of the State of Oregon (about 16,900 square miles). In addition, over 18 percent of the State of Washington (approximately 19,600 square miles) is also located in the Snake River Basin. The Snake River stretches across nearly 760 miles of southern and southwestern Idaho, with about 270 miles of this segment acting as the border between Oregon and Idaho. Near Lewiston the Snake River leaves Idaho (having left Oregon upstream near China Garden Creek), traveling the remainder of its length westward across Washington toward its confluence with the Columbia River.

Conditions within this system vary ecologically, geologically, and hydrologically between upstream and downstream segments. Ecological variations within the river system are evident in the changes in climate, vegetation, animal populations and fisheries throughout the listed segments. Geologic variation such as changes in elevation, soil, rock type, landforms and relative impact of naturally occurring erosive processes are observed upstream to downstream. Equally evident are the hydrologic variation that occur with distance traveled from the fast-flowing upstream section of the river, through the slower-flowing, more lacustrine (lake-like) reservoir systems, to the rapid, white-water section downstream of Hells Canyon Dam. In addition to changes in flow and velocity, hydrologic variations include differences in relative ground and surface-water inflows and channel morphology throughout the listed segments. Variations in water quality and quantity also occur over time. Temporal variations cover a wide range of factors including historical vs. current land use and river management conditions, changes induced by differences in flow and precipitation in a wet year vs. a dry year, and seasonal variation in both water quality and quantity.

For more information on the characterization of the Snake River basin watershed, see section 2.1 of the Snake River - Hells Canyon Subbasin Assessment.

Beneficial Uses

Designated surface water beneficial use classifications are intended to protect the various uses of public surface waters. The specific designated beneficial uses for the Snake River - Hells Canyon Subbasin differ slightly between Oregon and Idaho, but the basic concepts are consistent. The various designated beneficial uses can be grouped into five bi-state categories. (See table 1)

Table 1

<i>Oregon Beneficial Use</i>	<i>Idaho Beneficial Use</i>	<i>Bi-State Beneficial Use</i>
Public Domestic Water Supply	Cold Water Biota	Aquatic Life
Private Domestic Water Supply	Primary Contact Recreation	Recreation
Industrial Water Supply	Domestic Water Supply	Water Supply
Irrigation	Special Resource Water	Wildlife habitat
Livestock Watering	Salmonid Spawning	Aesthetics
Fishing and Boating		
Resident Fish and Aquatic Life		
Anadromous Fish Passage		
Wildlife and Hunting		
Fishing		
Water Contact Recreation		
Salmonid Rearing and Spawning		
Hydropower		
Commercial Navigation and Transport		
Aesthetic Quality		

Numeric and narrative water quality standards are designed to protect the most sensitive of each state's beneficial uses.

Current Conditions

The mainstem Snake River from where the river intersects the OR/ID border at river mile 409 downstream to immediately above the Salmon River at river mile 188 has been identified as water quality limited due to violations of water quality standards for both states (See table 2)

Table 2

<i>Oregon 303(d) Listed Pollutants</i>	<i>Idaho 303 (d) Listed Pollutants</i>
Mercury*	Bacteria
Temperature	Dissolved Oxygen (DO)
	Nutrients
	Sediment
	pH
	Mercury*
	Temperature

*Because of a lack of water column data for mercury in the Snake River, IDEQ and ODEQ have agreed to postpone development of a mercury TMDL until 2006.

Existing Sources of Water Pollution

The following parameters have been identified as causing violations of Oregon and Idaho water quality standards in the section of the Snake River covered in this TMDL

Dissolved Oxygen

Dissolved oxygen (DO) is important for fish and other aquatic life. Low DO levels in the Snake River are caused primarily by oxygen-demanding pollutants and by respiration effects of algae

Nutrients

Nutrients help promote the growth of algae. Respiring algae consume oxygen. During the day, when sunlight drives photosynthesis, the effects of respiration are offset by the production of oxygen. At night, however, when the sun cannot drive photosynthesis, the algae consume oxygen from the water column. In addition, decomposition of algae and other detritus can deplete oxygen from the water and sediment. The following is a listing of possible nutrient sources in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable sources of nutrients in the subbasin.

- Urban runoff
- Rural runoff
- Agricultural runoff
- Forestry runoff
- Instream and nearstream erosion
- Algal and detritus

Biochemical Oxygen Demand (BOD)

BOD is a measure of the oxygen required to oxidize organic material. The following is a listing of possible causes of BOD in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable sources of nutrients in the subbasin.

- Naturally occurring algae and detritus
- Increased naturally occurring algae and detritus
- Municipal waste
- Agricultural waste
- Industrial waste

Nutrients

Excess nutrients, primarily phosphorus and nitrogen, cause nuisance aquatic growth that can adversely affect aquatic life and recreational uses.

Phosphorous

Although phosphorus is naturally occurring in the Snake River basin, there are also anthropogenic sources. The following is a listing of possible phosphorus sources in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable sources of phosphorus in the subbasin.

- Natural geologic inputs
- Irrigation induced erosion
- The creation of artificial water ways and water levels through agricultural practices
- Instream and near-stream erosion
- Applied fertilizers in farming and landscaping
- Duration and density of livestock grazing
- Erosion from forest lands
- Sewage and septic waste

Nitrogen

Nitrogen also has natural as well as anthropogenic sources. The following is a listing of possible nitrogen sources in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable sources of nitrogen in the subbasin.

- Biological fixation
- Irrigation induced erosion
- Industrial wastewater
- Municipal wastewater
- Septic discharges

pH

pH is the measure of acidity or alkalinity in a system. Extreme high levels of pH can be toxic to aquatic life. In the Snake River - Hells Canyon subbasin reach variations in pH are buffered by naturally occurring minerals. The photosynthetic process of algae can drive the pH up to alkaline levels that are toxic. The following is a listing of possible factors affecting pH in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable impacts of pH levels in the subbasin.

- Biological buffering
- Industrial and municipal waste
- Ammonia production during organic matter decomposition
- Agricultural run-off
- Carbon dioxide uptake during photosynthesis

Sediment

Suspended sediment and bedload sediment can have a negative impact on aquatic life, including interfering with feeding behavior, gill damage, reduced growth rates, smothering eggs and fry, and death. The following is a listing of possible sediment sources in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable sources of sediment in the subbasin.

- High flow events
- Erosion from roadways
- Erosion from agricultural lands
- Urban and suburban stormwater run-off
- Landslides
- Forest fires

Temperature

Temperature is a key factor in determining water quality, particularly in regards to fish health and aquatic habitat. High temperatures can be harmful to fish at all stages of life, especially if they occur in combination with other habitat limitations. In the Snake River - Hells Canyon reach natural environmental factors such as a hot, dry climate, high solar radiation, and sparse, low growing native vegetation play a major role in determining water temperature. The following is a listing of factors affecting temperature in the subbasin. This listing is not meant to be comprehensive, but it does contain the most probable temperature impacts in the subbasin.

- Anthropogenic cooling due to water storage and release and stabilization of tributary and mainstem river flows
- Agricultural inputs
- Industrial inputs
- Sewage treatment plant discharges
- Riparian vegetation disturbance in upstream reaches and tributaries

Total Dissolved Gas

Supersaturation of total dissolved gas can lead to gas bubble trauma disease in sub-yearling and yearling salmon. The primary cause of supersaturation of total dissolved gas in the water column is:

- Spills and releases from impoundments

CHAPTER 4 – GOALS AND OBJECTIVES

The overall goal of the TMDL Water Quality Management Plan (WQMP) is to achieve compliance with water quality standards for each of the Oregon 303(d) listed parameters and streams in the Snake River - Hells Canyon Subbasin. Specifically the WQMP combines a description of Designated Management Agencies (DMA) and point source Implementation Plans that are or will be in place to address the load and wasteload allocations in the TMDL. The specific goal of this WQMP is to describe a strategy for reducing discharges from nonpoint sources to the level of the load allocations and for reducing discharges from point sources to the level of the waste load allocations described in the TMDL. As discussed above, this plan is preliminary in nature and is designed to be adaptive as more information and knowledge is gained regarding the pollutants, allocations, management measures, and other related areas.

The expectations of all point sources and DMAs are to:

1. Develop Best Management Practices (BMPs) to achieve load allocations and waste load allocations.
2. Give reasonable assurance that management measures will meet load allocations through both quantitative and qualitative analysis of management measures.
3. Adhere to measurable milestones for progress.
4. Develop a timeline for implementation, with reference to costs and funding.
5. Develop a monitoring plan to determine if:
 - a. BMPs are being implemented
 - b. Individual BMPs are effective
 - c. Load and wasteload allocations are being met
 - d. Water quality standards are being met

CHAPTER 5 - IDENTIFICATION OF RESPONSIBLE PARTICIPANTS

The purpose of this element is to identify the organizations (point sources and DMAs) responsible for the implementation of the WQMP in Oregon and to list the major responsibilities of each organization. What follows is a simple list of those organizations and responsibilities. This is not intended to be an exhaustive list of every participant that bears some responsibility for improving water quality in the Snake River - Hells Canyon Subbasin. Because this is a community wide effort, a complete listing would have to include every business, every industry, every farm, and ultimately every citizen living or working within the subbasin. We are all contributors to the existing quality of the waters in the Snake River - Hells Canyon Subbasin and we all must be participants in the efforts to improve water quality.

Oregon Department of Environmental Quality

- NPDES Permitting and Enforcement
- WPCF Permitting and Enforcement
- Technical Assistance
- Financial Assistance

Oregon Department of Agriculture

- Agricultural Water Quality Management Plan Development, Implementation & Enforcement.
- CAFO Permitting and Enforcement
- Technical Assistance
- Revise Agricultural WQMAP
- Rules under Senate Bill (SB) 1010 to clearly address TMDL and Load Allocations as necessary
- Riparian area management

Oregon Department of Forestry

- Forest Practices Act (FPA) implementation
- Conservation Reserve Enhancement Program
- Revise statewide FPA rules and/or adopt subbasin specific rules as necessary
- Riparian area management

Oregon Department of Transportation

- Routine Road Maintenance, Water Quality and Habitat Guide Best Management Practices
- Pollution Control Plan and Erosion Control Plan
- Design and Construction

Idaho Power Company

- Comply with Conditions of Section 401 WQ Certification

Federal Land Management Agencies (Forest Service and BLM)

- Follow standards and Guidance listed in PACFISH and INFISH
- Follow range management standards

Amalgamated Sugar Company, American Fine Foods, Heinz Frozen Foods, Idaho Power Company, City of Ontario, City of Nyssa

- Comply with NPDES permits

City of Adrian, Alta Gold, Farewell Bend Inc., Idaho Concrete Company, City of Richland

- Comply with WPCF permits

Alta Gold, Larry Hallam, Heinz Frozen Foods, Idaho Concrete, Kesler Farms Inc., Neal Mishler, Northwest Essential Oils Inc., Ontario Asphalt and Concrete Inc., City of Ontario

- Comply with general permits

Cities of Adrian, Nyssa, Ontario

- Construction, operation, and maintenance of the municipal separate storm sewer system within the city limits
- Land use planning/permitting
- Maintenance, construction and operation of parks and other city owned facilities and infrastructure
- Riparian area management

Malheur, Baker, and Wallowa Counties

- Construction, operation and maintenance of county roads and county storm sewer system
- Land use planning/permitting
- Maintenance, construction and operation of parks and other county owned facilities and infrastructure
- Inspection and permitting of septic systems
- Riparian area management

CHAPTER 6 – PROPOSED MANAGEMENT MEASURES

This section of the plan outlines the proposed management measures that are designed to meet the wasteload allocations and load allocations of each TMDL. The timelines for addressing these measures are given in the following section.

The management measures to meet the load and wasteload allocations may differ depending on the source of the pollutant. Given below is a categorization of the sources and a description of the management measures being proposed for each source category.

Wastewater Treatment Plants

The wasteload allocations assigned to wastewater treatment plants (WWTP) will be implemented through modifications to their National Pollutant Discharge Elimination System (NPDES) permits. Permit modifications, however, will likely be preceded by the establishment of Mutual Agreements and Orders (MAOs) between ODEQ and individual sources.

Upon approval of the TMDLs by EPA, Oregon DEQ will develop mutual agreements and orders (MAOs) with the permitted sources. Each MAO will include a compliance schedule for: preparing a facilities plan which will identify alternatives and costs for meeting the source's WLAs; for preparing plans and specifications for the alternative selected to meet the WLAs; and a time frame for completing necessary improvements and for meeting the WLAs. In cases where a source can demonstrate that costs of achieving WLAs are burdensome, ODEQ will consider extension of time frames or other steps as appropriate and reasonable to meet the WLAs. NPDES permits that implement the TMDLs will be prepared based upon the selected alternative in the facilities plan. In deriving permit limits from the established WLAs, DEQ permit writers will recognize that the WLAs only apply to the critical periods defined in the TMDLs. The critical period, however, may not pertain to other water quality standards violations or issues (such as mixing zone requirements) not addressed in the TMDL. Permit writers will also recognize that, where WLAs are defined as existing loads or as a percent reduction of existing loads, final determination of existing loads will be determined in the facilities planning process.

General NPDES Permitted Sources

All general NPDES permits will be reviewed and, if necessary, modified to ensure compliance with load allocations. Either numeric effluent limits will be incorporated into the permits or specific management measures and plans will be developed. In cases where incorporation of assigned WLAs cannot be covered under a general permit, sources will be asked to apply for a conventional permit. These permits will be administered as described above for wastewater treatment plants.

Other Sources

For discharges from sources other than the WWTPs and those permitted under general NPDES permits and WPCF permits (non-point sources), ODEQ has assembled an initial listing of management categories. This listing, given below, is designed to be used by the designated management agencies (DMAs) as guidance for selecting management measures to be included in their Implementation Plans (IPs). Each DMA will be responsible for examining the categories to determine if the source and/or management measure is applicable within their jurisdiction. This listing is not comprehensive and other sources and management measures will most likely be added by the DMAs where appropriate. For each source or measures deemed applicable a listing of the frequency and extent of application should also be provided. In addition, each of the DMAs is responsible for source assessment and identification, which may result in additional categories. It is crucial that management measures be directly linked with their effectiveness at reducing pollutant loading contributions.

County and City Government

Public Awareness/Education

- General and Targeted Outreach

New Development and Construction

- Planning, permitting, and design procedures
- Education and outreach
- Construction and post construction control procedures
- Storm drain system construction

Existing Development

- Storm drain system operation and maintenance and retrofitting

- Street and road sweeping and maintenance
- Septic system inspection and enforcement
- Parking lot sweeping
- Commercial and industrial facilities controls
- Urban and commercial source controls (i.e. fertilizers and pet waste)

Riparian Area Management

- Revegetation
- Streambank stabilization

Community Facility Management

- Parks, public water bodies, public buildings and facilities

Best Management Practices

- Implementation and monitoring

Rules and Ordinances

- Creation of local rules and ordinances to meet load allocations and water quality standards

Forest Practices

- Riparian Area Management
- Road and Culvert Management
- BMP implementation and monitoring
- Public awareness and education

Agricultural Practices

- Riparian area management
- Erosion control
- Animal waste control
- Nutrient management
- BMP implementation and monitoring
- Public awareness and education

Transportation

- Road construction, maintenance, and repair
- BMP implementation and monitoring
- Public awareness and education

CHAPTER 7 – TIMELINE FOR IMPLEMENTATION

The purpose of this element of the WQMP is to demonstrate a strategy for implementing and maintaining the plan and the resulting water quality improvements over the long term. Included in this section are timelines for the implementation of ODEQ activities. Each point source and DMA Implementation Plan (IP) will also include timelines. Timelines should be as specific as possible and should include a schedule for Best Management Practices (BMP) installation and/or evaluation, monitoring schedules, reporting dates and milestones for evaluating progress.

Point source and DMA IPs will be designed to reduce pollutant loads from sources to meet TMDLs, their associated loads, and water quality standards. ODEQ recognizes that where implementation involves significant habitat restoration or reforestation, water quality standards may not be met for decades. In addition, the ODEQ recognizes that technology for controlling nonpoint source pollution is, in some cases, in the development stages and will likely take one or more iterations to develop effective techniques.

The Department intends to regularly review progress of the IPs. The plans, this overall WQMP, and the TMDLs are part of an adaptive management process. Modifications to the WQMP and the IPs are expected to occur on an annual or more frequent basis. Review of the TMDLs are expected to occur approximately five years after the final approval of the TMDLs, or whenever deemed necessary by ODEQ. Figure 2, below, gives the timeline for activities related to the WQMP and associated point source and DMA Implementation Plans.

Figure 2. Estimated timeline for activities related to the WQMP and associated point source and DMA Implementation Plans.

Activity	2003		2004		2005		2006		
ODEQ Establishment of Mutual Agreements and Orders to Require Facilities to prepare Facilities Plans (Implementation Plans – IPs) for meeting WLAs and NPDES Permits									
ODEQ Issuance of MS4 Permits (if appropriate)									
ODEQ Modification of General Permits to meet WLAs									
DMA Development and Submittal of Implementation and Monitoring Plans									
NPDES Permit Holders Develop Facilities Plans (IPs)									
DMA Implementation of Plans									
ODEQ Modification of WWTP Permits to meet WLAs									
NPDES Permit Holders Implement Facilities Plans (IPs) for Meeting WLAs									
ODEQ/DMA/Public Review of TMDL and WQMP									
DMA Submittal of Annual Reports									

(December 2007 marks the end of the first five-year “phase” of implementation. Consecutive five-year phases will follow with assessment of system wide progress at the end of each phase (i.e. 2012, 2017, 2022, etc.)

CHAPTER 8 – REASONABLE ASSURANCE

This section of the WQMP is intended to provide reasonable assurance that the WQMP (along with the associated point source and DMA Implementation Plans) will be implemented and that the TMDL and associated allocations will be met.

There are several programs that are either already in place or will be put in place to help assure that this WQMP will be implemented. Some of these are traditional regulatory programs such as specific requirements under NPDES discharge permits. Other programs address non-point sources under the auspices of State of Oregon law, such as on agricultural and forested lands, and through voluntary efforts.

Point Sources

Reasonable assurance that implementation of the point source wasteload allocations will occur will be addressed through the issuance or revision of NPDES and WPCF permits.

NPDES and WPCF Permit Programs

The ODEQ administers two different types of wastewater permits in implementing Oregon Revised Statute (ORS) 468B.050. These are: the National Pollutant Discharge Elimination System (NPDES) permits for surface water discharge; and Water Pollution Control Facilities (WPCF) permits for onsite (land) disposal. The NPDES permit is also a Federal permit, which is required under the Clean Water Act for discharge of waste into waters of the United States. ODEQ has been delegated authority to issue NPDES permits by the EPA. The WPCF permit is unique to the State of Oregon. Adherence to permit conditions is required by State and Federal Law and ODEQ and EPA have the responsibility to ensure NPDES permit compliance.

All general permits within the subbasin will also be revised to address the appropriate WLAs as appropriate and necessary.

Oregon NPDES municipal separate storm sewer (MS4) permits will also be revised where appropriate and necessary to address the appropriate waste load allocations. It is envisioned each MS4 permit within the Snake River - Hells Canyon Subbasin will be revised, reissued, or issued with requirements that:

- A detailed implementation plan be prepared that presents reasonable assurance that WLAs will be met.
- The portion of the Implementation Plan (IP) addressing the WLAs is implemented in a timely fashion.

In Oregon MS4 permits provisions will also need to address the pertinent OAR language pertaining to temperature management plans (as described earlier in this document).

Nonpoint Sources

Forestry

The Oregon Department of Forestry (ODF) is the designated management agency for regulation of water quality on non-federal forested lands in Oregon.

The Oregon Board of Forestry has adopted water protection rules, including but not limited to OAR Chapter 629, Divisions 635-660, which describe BMPs for forest operations. These rules are implemented and enforced by ODF and monitored to assure their effectiveness. The Environmental Quality Commission, Board of Forestry, ODEQ, and ODF have agreed that these pollution control measures will be relied upon to result in achievement of state water quality standards. ODF provides on the ground field administration of the Forest Practices Act (FPA). For each administrative rule, guidance is provided to field administrators to insure proper, uniform and consistent application of the Statutes and Rules. The FPA requires penalties, both civil and criminal, for violation of Statutes and Rules. Additionally, whenever a violation occurs, the responsible party is obligated to repair the damage.

Federal lands follow Forest Practices Act as described in Forest Plans.

For more information, refer to the Management Measures element of this Plan.

ODF and ODEQ are involved in several statewide efforts to analyze existing forest practice measures and to better define the relationship between the TMDL load allocations and the forest practice measures designed to protect water quality.

As a DMA for water quality management on nonfederal forestlands, the ODF is also working with the ODEQ through a memorandum of understanding (MOU) signed in June of 1998. This MOU was designed to improve the coordination between the ODF and the ODEQ in evaluating and proposing possible changes to the forest practice rules as part of the Total Maximum Daily Load process. The purpose of the MOU is also to guide coordination between the ODF and ODEQ regarding water quality limited streams on the 303d list. An evaluation of rule adequacy will be conducted (also referred to as a "sufficiency analysis") through a

water quality parameter by parameter analysis. This statewide demonstration of forest practices rule effectiveness in the protection of water quality will address the following specific parameters and is expected to be completed by the end of calendar year 2001.

- 1) Temperature
- 2) Sediment and turbidity
- 3) Aquatic habitat modification
- 4) Bio-criteria
- 5) Other parameters

These sufficiency analyses will be reviewed by peers and other interested parties prior to final release. The analyses will be designed to provide background information and techniques for watershed-based assessments of BMP effectiveness and water quality assessments for watershed with forest and mixed land uses. Once the sufficiency analyses are completed, they will be used as a coarse screen for common elements applicable to each individual TMDL to determine if forest practices are contributing to water quality impairment within a given watershed and to support the adaptive management process. See Appendix A for a more detailed description of Oregon Department of Forestry TMDL-related activities.

Current forestry BMPs in Oregon and Idaho will remain as each state's forestry component of the TMDL.

Appendix A includes the Forestry Water Quality Management plan for the Snake River - Hells Canyon Subbasin.

Agriculture

In Oregon it is the Oregon Department of Agriculture's (ODA) statutory responsibility to develop agricultural water quality management (AWQM) plans and enforce rules that address water quality issues on agricultural lands, including the water quality rules of individual basin plans. The AWQM Act directs ODA to work with local farmers and ranchers to develop water quality management area plans for specific watersheds that have been identified as violating water quality standards and having agriculture water pollution contributions. The agriculture water quality management area plans are expected to identify problems in the watershed that need to be addressed and outline ways to correct those problems. These water quality management plans are developed at a local level, reviewed by the State Board of Agriculture, and then adopted into the Oregon Administrative Rules. It is the intent that these plans focus on education, technical assistance, and flexibility in addressing agriculture water quality issues. These plans and rules will be developed or modified to achieve water quality standards and will address the load allocations identified in the TMDL. In those cases when an operator refuses to take action, the law allows ODA to take enforcement action. ODEQ will work with ODA to ensure that rules and plans meet load allocations. Individual water quality plans to be administered by ODA include the Owyhee, Malheur, Burnt and Powder Rivers and the Wallowa Agricultural Water Quality Management Plan and Rules. The Malheur River Water Quality Plan and the Wallowa Agricultural Water Quality Management Plan and Rules have been completed and can be accessed at http://oda.state.or.us/Natural_Resources/agwqmpr.htm.

Appendix B will include the Agricultural Water Quality Management plan for the Snake River - Hells Canyon Subbasin.

Transportation

The Oregon Department of Transportation (ODOT) has been issued an NPDES MS4 waste discharge permit. Included with ODOT's application for the permit was a surface water management plan which has been approved by ODEQ and which addresses the requirements of a Total Maximum Daily Load (TMDL) allocation for pollutants associated with the ODOT system. Both ODOT and ODEQ agree that the provisions of the permit and the surface water management plan will apply to ODOT's statewide system. This statewide approach for an ODOT TMDL watershed management plan addresses specific pollutants, but not specific watersheds. Instead, this plan demonstrates how ODOT will incorporate water quality protection into project development, construction, and operations and maintenance of the state and federal transportation system that is managed by ODOT, thereby meeting the elements of the National Pollutant Discharge Elimination System (NPDES) program, and the TMDL requirements.

The MS4 permit and the plan:

- Streamlines the evaluation and approval process for the watershed management plans
- Provides consistency to the ODOT highway management practices in all TMDL watersheds.
- Eliminates duplicative paperwork and staff time developing and participating in the numerous TMDL management plans.

Temperature and sediment are the primary concerns for pollutants associated with ODOT systems that impair the waters of the state. ODEQ is still in the process of developing the TMDL water bodies and determining pollutant levels that limit their beneficial uses. As TMDL allocations are established by watershed, rather than by pollutants, ODOT is aware that individual watersheds may have pollutants that may require additional consideration as part of the ODOT watershed management plan. When these circumstances arise, ODOT will work with DEQ to incorporate these concerns into the statewide plan.

Appendix 3 includes the transportation water quality management plan for the Snake River - Hells Canyon Subbasin.

Federal Forest Lands

All management activities on federal lands managed by the U.S. Forest Service (USFS) and the Bureau of Land Management must follow standards and guidelines (S&Gs) as listed in the respective Land and Resource Management Plans (LRMPs), as amended, for the specific land management units.

PACFISH

A significant LRMP amendment affecting USFS land management was the implementation of interim strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California; otherwise known as PACFISH (USFS 1995). This amendment added further protection to anadromous fish and their habitat following their listing under the Federal Endangered Species Act (ESA).

The PACFISH revision to the National Forest LRMPs provides interim direction for establishment and management of Riparian Habitat Conservation Areas (RHCAs) and S&Gs for Key Watersheds. All National Forest watersheds in the Snake River - Hells Canyon Subbasin have been designated as Key Watersheds. The PACFISH RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by: (1) influencing the delivery of sediment, organic matter, and woody debris to streams, (2) providing root strength for channel stability, (3) shading the stream, and (4) protecting water quality. Interim buffer widths are described as follows:

1. Fish-bearing streams: Includes the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge; or to the outer edges of the 100-year floodplain; or to the outer edges of riparian vegetation; or to the distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.
2. Permanently flowing non-fish bearing streams: Includes the stream and the areas of the active stream channel of the 100-year flood plain; or a distance equal to the height of one site-potential tree; or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.
3. Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Includes the waterbody and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetlands pond or lake, whichever is greatest.
4. Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: At a minimum, these widths must include: The extent of landslides and landslide-prone areas; the

intermittent stream channel and the area to the top of the inner gorge; the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation; the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree; or 100 feet slope distance, whichever is greatest.

Standards and Guidelines

Specific and general S&Gs found in Forest LRMPs, PACFISH, and Biological Opinions are applied to various National Forest management activities such as Timber Management, Roads Management, Range Management, and Fire and Fuels Management and are listed below. Standards and Guidelines for other Forest management activities such as recreation, mining, fisheries restoration, and watershed management can be found in the respective Forest LRMPs (USFS 1990) and in PACFISH (USFS 1995).

Appendix D includes Federal Land Management Water Quality Management Plan for the Snake River - Hells Canyon Subbasin.

Urban and Rural Sources

Responsible participants for implementing DMA specific water quality management plans for urban and rural sources were identified in Chapter 5 of this Water Quality Management Plan. Upon approval of the Snake River - Hells Canyon Subbasin TMDLs, it is ODEQ's expectation that identified, responsible participants will develop, submit, and implement individual Implementation Plans (IPs) that will achieve the load allocations established by the TMDLs. These activities will be accomplished by the responsible participants in accordance with the Schedule in Chapter 7 of this Water Quality Management Plan. The DMA specific water quality management plans must address the following items:

- 1) Proposed management measures tied to attainment of the load allocations and/or established surrogates of the TMDLs, such as vegetative site potential for example.
- 2) Timeline for implementation.
- 3) Timeline for attainment of load allocations.
- 4) Identification of responsible participants demonstrating who is responsible for implementing the various measures.
- 5) Reasonable assurance of implementation.
- 6) Monitoring and evaluation, including identification of participants responsible for implementation of monitoring, and a plan and schedule for revision of Implementation Plan.
- 7) Public involvement.
- 8) Maintenance effort over time.
- 9) Discussion of cost and funding.
- 10) Citation of legal authority under which the implementation will be conducted.

Should any responsible participant fail to comply with their obligations under this WQMP, ODEQ will take all necessary action to seek compliance. Such action will first include negotiation, but could evolve to issuance of Department or Commission Orders and other enforcement mechanisms.

Appendix E will include water quality management plans for the cities and counties identified in Chapter 5 of this Water Quality Management Plan

The Oregon Plan

The Oregon Plan for Salmon and Watersheds represents a major effort, unique to Oregon, to improve watersheds and restore endangered fish species. The Oregon Plan is a major component of the demonstration of "reasonable assurance" that this TMDL WQMP will be implemented.

The Plan consists of four essential elements:

Coordinated Agency Programs:

Many state and federal agencies administer laws, policies, and management programs that have an impact on salmon and water quality. These agencies are responsible for fishery harvest management, production of hatchery fish, water quality, water quantity, and a wide variety of habitat protection, alteration, and restoration activities. Previously, agencies conducted business independently. Water quality and salmon suffered because they were affected by the actions of all the agencies, but no single agency was responsible for comprehensive, life-cycle management. Under the Oregon Plan, all government agencies that impact salmon are accountable for coordinated programs in a manner that is consistent with conservation and restoration efforts.

Community-Based Action:

Government, alone, cannot conserve and restore salmon across the landscape. The Oregon Plan recognizes that actions to conserve and restore salmon must be worked out by communities and landowners, with local knowledge of problems and ownership in solutions. Watershed councils, soil and water conservation districts, and other grassroots efforts are vehicles for getting the work done. Government programs will provide regulatory and technical support to these efforts, but local people will do the bulk of the work to conserve and restore watersheds. Education is a fundamental part of the community-based action. People must understand the needs of salmon in order to make informed decisions about how to make changes to their way of life that will accommodate clean water and the needs of fish.

Monitoring:

The monitoring program combines an annual appraisal of work accomplished and results achieved. Work plans will be used to determine whether agencies meet their goals as promised. Biological and physical sampling will be conducted to determine whether water quality and salmon habitats and populations respond as expected to conservation and restoration efforts.

Appropriate Corrective Measures:

The Oregon Plan includes an explicit process for learning from experience, discussing alternative approaches, and making changes to current programs. The Plan emphasizes improving compliance with existing laws rather than arbitrarily establishing new protective laws. Compliance will be achieved through a combination of education and prioritized enforcement of laws that are expected to yield the greatest benefits for salmon.

Voluntary Measures

There are many voluntary, non-regulatory, watershed improvement programs (Actions) that are in place and are addressing water quality concerns in the Snake River - Hells Canyon Subbasin. Both technical expertise and partial funding are provided through these programs. Examples of activities promoted and accomplished through these programs include: planting of conifers, hardwoods, shrubs, grasses and forbs along streams; relocating legacy roads that may be detrimental to water quality; replacing problem culverts with adequately sized structures, and improvement/ maintenance of legacy roads known to cause water quality problems. These activities have been and are being implemented to improve watersheds and enhance water quality. Many of these efforts are helping resolve water quality related legacy issues.

Landowner Assistance Programs

A variety of grants and incentive programs are available to landowners in the Snake River - Hells Canyon Subbasin. These incentive programs are aimed at improving the health of the watershed, particularly on private lands. They include technical and financial assistance, provided through a mix of state and federal funding. Local natural resource agencies administer this assistance, including the Oregon Department of Forestry, the Oregon Department of Fish and Wildlife, ODEQ, and the National Resources Conservation Service.

Field staff from the administrative agencies provide technical assistance and advice to individual landowners, watershed councils, local governments, and organizations interested in enhancing the subbasin. These services include on-site evaluations, technical project design, stewardship/conservation plans, and

referrals for funding as appropriate. This assistance and funding is further assurance of implementation of the TMDL WQMP.

Financial assistance is provided through a mix of cost-share, tax credit, and grant funded incentive programs designed to improve on-the-ground watershed conditions. Some of these programs, due to source of funds, have specific qualifying factors and priorities. Cost share programs include the Forestry Incentive Program (FIP), Stewardship Incentive Program (SIP), Environmental Quality Incentives Program (EQIP), and the Wildlife Habitat Incentive Program (WHIP).

CHAPTER 9 – MONITORING AND EVALUATION

Monitoring and evaluation has two basic components: 1. Implementation of point source and DMA Implementation Plans (IPs) identified in this document and 2. Physical, chemical and biological parameters for water quality and specific management measures. This information will provide information on progress being made toward achieving TMDL allocations and achieving water quality standards and to use as we evaluate progress as described under Adaptive Management in Chapter 1: Introduction.

The information generated by each of the agencies/entities gathering data in the Snake River - Hells Canyon Subbasin will be pooled and used to determine whether management actions are having the desired effects or if changes in management actions and/or TMDLs are needed. This detailed evaluation will typically occur on a 5-year cycle. If progress is not occurring then the appropriate management agency will be contacted with a request for action.

The objectives of this monitoring effort are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and track effectiveness of TMDL implementation. This monitoring and feedback mechanism is a major component of the “reasonable assurance of implementation” for the Snake River - Hells Canyon Subbasin TMDL WQMP.

This WQMP and the DMA-specific IPs will be tracked by accounting for the numbers, types, and locations of projects, BMPs, educational activities, or other actions taken to improve or protect water quality. The mechanism for tracking DMA implementation efforts will be annual reports to be submitted to ODEQ.

CHAPTER 10 – PUBLIC INVOLVEMENT

To be successful at improving water quality a TMDL WQMP must include a process to involve interested and affected stakeholders in both the development and the implementation of the plan. In addition to the ODEQ public notice policies and public comment periods associated with TMDLs and permit applications, future Snake River - Hells Canyon Subbasin TMDL public involvement efforts will focus specifically on urban, agricultural and forestry activities. DMA-specific public involvement efforts will be detailed within the IPs included in the appendices.

CHAPTER 11 – COSTS AND FUNDING

Designated Management Agencies will be expected to provide a fiscal analysis of the resources needed to develop, execute and maintain the programs described in their Implementation Plans.

The purpose of this element is to describe estimated costs and demonstrate there is sufficient funding available to begin implementation of the WQMP. Another purpose is to identify potential future funding sources for project implementation. There are many natural resource enhancement efforts and projects

occurring in the subbasin that are relevant to the goals of the plan. These efforts, in addition to proposed future actions are described in the Management Measures element of this Plan.

Potential Sources of Project Funding

Funding is essential to implementing projects associated with this WQMP. There are many sources of local, state, and federal funds. The following is a partial list of assistance programs available in the Snake River - Hells Canyon Subbasin.

<u>Program</u>	<u>Agency/Source</u>
Oregon Plan for Salmon and Watersheds	OWEB
Environmental Quality Incentives Program	USDA-NRCS
Wetland Reserve Program	USDA-NRCS
Conservation Reserve Enhancement Program	USDA-NRCS
Stewardship Incentive Program	ODF
Access and Habitat Program	ODFW
Partners for Wildlife Program	USDI-FSA
Conservation Implementation Grants	ODA
Water Projects	WRD
Nonpoint Source Water Quality Control (EPA 319)	ODEQ-EPA
Riparian Protection/Enhancement	COE
Oregon Community Foundation	OCF
State Revolving Funds	ODEQs
TEA 21 programs	ODOT

Grant funds are available for improvement projects on a competitive basis. Field agency personnel assist landowners in identifying, designing, and submitting eligible projects for these grant funds. For private landowners, the recipient and administrator of these grants is generally the local Soil and Water Conservation District. Grant fund sources include:

Oregon Watershed Enhancement Board (OWEB)

OWEB funds watershed improvement projects with state money. This is an important piece in the implementation of Oregon's Salmon Plan. Current and past projects have included road relocation/closure/improvement projects, in-stream structure work, riparian fencing and revegetation, off stream water developments, and other management practices.

Bonneville Power Administration (BPA)

BPA funds are federal funds for fish habitat and water quality improvement projects. These have also included projects addressing road conditions, grazing management, in-stream structure, and other tools.

Individual grant sources

Individual grant sources for special projects have included Forest Health money available through the State and Private arm of the USDA Forest Service.

CHAPTER 12 – CITATION TO LEGAL AUTHORITIES

Clean Water Act Section 303(d)

Section 303(d) of the 1972 federal Clean Water Act as amended requires states to develop a list of rivers, streams and lakes that cannot meet water quality standards without application of additional pollution controls beyond the existing requirements on industrial sources and sewage treatment plants. Waters that need this additional help are referred to as "water quality limited" (WQL). Water quality limited waterbodies

must be identified by the Environmental Protection Agency (EPA) or by a state agency which has been delegated this responsibility by EPA. In Oregon, this responsibility rests with the ODEQ. In Idaho it rests with IDEQ. ODEQ and IDEQ update the list of water quality limited waters every two years. The list is referred to as the 303(d) list. Section 303 of the Clean Water Act further requires that Total Maximum Daily Loads (TMDLs) be developed for all waters on the 303(d) list. A TMDL defines the amount of pollution that can be present in the waterbody without causing water quality standards to be violated. A WQMP is developed to describe a strategy for reducing water pollution to the level of the load allocations and waste load allocations prescribed in the TMDL, which is designed to restore the water quality and result in compliance with the water quality standards. In this way, the designated beneficial uses of the water will be protected for all citizens.

The Oregon Department of Environmental Quality is authorized by law to prevent and abate water pollution within the State of Oregon pursuant to the following statute:

ORS 468B.020 Prevention of pollution (1) Pollution of any of the waters of the state is declared to be not a reasonable or natural use of such waters and to be contrary to the public policy of the State or Oregon, as set forth in ORS 468B.015.

- (2) In order to carry out the public policy set forth in ORS 468B.015, the department shall take such action as is necessary for the prevention of new pollution and the abatement of existing pollution by:
- (a) Fostering and encouraging the cooperation of the people, industry, cities and counties, in order to prevent, control and reduce pollution of the waters of the state; and
 - (b) Requiring the use of all available and reasonable methods necessary to achieve the purposes of ORS 468B.015 and to conform to the standards of water quality and purity established under ORS 468B.048.

NPDES and WPCF Permit Programs

ODEQ administers two different types of wastewater permits in implementing Oregon Revised Statute (ORS) 468B.050. These are: the National Pollution Discharge Elimination System (NPDES) permits for waste discharge; and Water Pollution Control Facilities (WPCF) permits for waste disposal. The NPDES permit is also a Federal permit and is required under the Clean Water Act. The WPCF permit is a state program. As permits are renewed they will be revised to insure that all 303(d) related issues are addressed in the permit.

Oregon Administrative Rules

The following Administrative Rules provide numeric and narrative criteria for parameters of concern. Due to the bi-state nature of the Snake River - Hells Canyon TMDL, the water quality targets identified are based on the most stringent of these criteria:

TMDL Parameter: Temperature

Applicable Rules: OARs 340-41-725,765,805, 845 (2)(b)(A&B)

TMDL Parameter: Dissolved Oxygen

Applicable Rules: OAR 340-041-725,765,805,845 (2)(a)(D)
OAR 340-041-725,765,805,845 (2)(a)(E)
OAR 340-041-725,765,805,845 (2)(a)(A)
OAR 340-041-725,765,805,845 (2)(a)(B)
OAR 340-041-725,765,805,845(2)(a)(F)

TMDL Parameter: pH

Applicable Rules: OAR 340-41-725,765,805,845 (2)(d)

TMDL Parameter: Bacterial

Applicable Rules: OAR 340-01-725, 765, 805, 845 (2)(e)(A)

TMDL Parameter: Mercury

Applicable Rules: OAR 340-41-725, 765, 805, 845 (2)(p)(A)

OAR 340-41-725, 765, 805, 845 (2)(p)(B)
OAR 340-41-725, 765, 805, 845 (2)(p)(A) as interpreted by the Oregon Health
Division

TMDL Parameter: Nuisance Algae

Applicable Rules: OAR 340-41-150(1)(b)
OAR 340-41-725, 765, 805, 845 (2)(h-l)

TMDL Parameter: Turbidity

Applicable Rules: OAR 340-41-725-765-805,845 (2)(c)

TMDL Parameter: Total Dissolved Gas

Applicable Rules: OAR 340-41-725, 765, 805, 845 (2)(n)

TMDL Parameter: Pesticides

Applicable Rules: OAR 340-42-725, 765, 805, 845 (2)(p)(A-D); Table 20 criteria

Oregon Forest Practices Act

The Oregon Department of Forestry (ODF) is the designated management agency for regulation of water quality on non-federal forestlands. The Board of Forestry has adopted water protection rules, including but not limited to OAR Chapter 629, Divisions 635-660, which describes BMPs for forest operations. The Environmental Quality Commission (EQC), Board of Forestry, ODEQ and ODF have agreed that these pollution control measures will be relied upon to result in achievement of state water quality standards.

ODF and ODEQ statutes and rules also include provisions for adaptive management that provide for revisions to FPA practices where necessary to meet water quality standards. These provisions are described in ORS 527.710, ORS 527.765, ORS 183.310, OAR 340-041-0026, OAR 629-635-110, and OAR 340-041-0120.

Senate Bill 1010

The Oregon Department of Agriculture has primary responsibility for control of pollution from agriculture sources. This is accomplished through the Agriculture Water Quality Management (AWQM) program authorities granted ODA under Senate Bill 1010 Adopted by the Oregon State Legislature in 1993. The AWQM Act directs the ODA to work with local farmers and ranchers to develop water quality management plans for specific watersheds that have been identified as violating water quality standards and have agriculture water pollution contributions. The agriculture water quality management plans are expected to identify problems in the watershed that need to be addressed and outline ways to correct the problems. ODA statutes and rules include provisions relating to water quality on agricultural lands applicable to the SR-HC TMDL; specifically OAR 603-095-0900 through 0960 and OAR 603—95-1800 through 1860.

Local Ordinances

Within the Implementation Plans in the appendices, the DMAs are expected to describe their specific legal authorities to carry out the management measures they choose to meet the TMDL allocations. Legal authority to enforce the provisions of a City's NPDES permit would be a specific example of legal authority to carry out management measures.

Appendix 1 – Oregon Department of Forestry

Implementation Plan for Non-Federal Forest Lands in Oregon

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Non-Federal Forest Lands

The purpose and goals of Oregon's Water Protection Rules (OAR 629-635-100) include protecting, maintaining, and improving the functions and values of streams, lakes, wetlands, and riparian management areas. Best management practices (BMPs) in the Oregon Forest Practices Act (FPA), including riparian zone protection measures and a host of other measures described below, are the mechanism for meeting State Water Quality Standards (WQS). There is a substantial body of scientific research and monitoring that supports an underlying assumption of the FPA, that maintaining riparian processes and functions is critical for water quality and fish and wildlife habitat. These riparian processes and functions include: Shade for stream temperature and for riparian species; large wood delivery to streams and riparian areas; leaf and other organic matter inputs; riparian microclimate regulation; sediment trapping; soil moisture and temperature maintenance; providing aquatic and riparian species dependent habitat; and nutrient and mineral cycling. The FPA provides a broad array of water quality benefits and contributes to meeting water quality standards for water quality parameters such as temperature, sediment, phosphorus, dissolved oxygen, nutrients, aquatic habitat and others.

Currently, many streams within the Snake River – Hells Canyon Subbasin significantly exceed the WQSs for the parameters of concern. The water quality impairments in the Snake River – Hells Canyon Subbasin clearly do not result solely from current forestry activities. Agricultural areas, and especially the extensive urban areas, contribute significantly to water quality impairment within the basin. It is also important to note that historic forest practices such as splash dam activities, use of log puncheon culverts, abandoned forest roads, and the widespread removal of wood from streams may continue to influence current stream conditions and riparian functions. In addition, current forest practices occur on forestlands that simultaneously support non-forestry land uses that can affect water quality, such as recreation, grazing and public access roads.

Water quality parameters are influenced in a number of ways. For example, it is recognized that increasing the level of riparian vegetation retained along forested reaches of these streams reduces solar loading, potentially preventing a substantial amount of stream heating. While providing high levels of shade to streams is an important aspect of meeting instream temperature standards it needs to be considered within the context of past management, stream morphology and flows, groundwater influences, site-productivity, insects, fire, and other disturbance mechanisms that vary in time and space across the landscape.

The amount of sediment reaching streams can also affect water quality. For example, it is recognized that, proper road construction and culvert placement, good road maintenance, appropriate road surfacing, locating side-cast and soil waste materials in stable locations, properly placing and removing temporary stream crossings, establishing appropriate water-bars on skid trails, using appropriate harvesting systems and techniques, proper site preparation (including slash disposal), among other sound forestry practices, can reduce or eliminate sediment from entering streams. The FPA deals with these and other forest activities.

As described below, ODF and DEQ are involved in several statewide efforts to analyze the existing FPA measures and to better define the relationship between TMDL load allocations and the FPA measures designed to protect water quality. How water quality parameters are affected, as established through the TMDL process as well as other monitoring data, will be an important part of the body of information used in determining the adequacy of the FPA.

Forest practices on non-federal land in Oregon are regulated under the FPA and implemented through administrative rules that are administered by the Oregon Department of Forestry (ODF). The Oregon Board of Forestry (BOF), in consultation with the Environmental Quality Commission (EQC), establish BMPs and other rules to ensure that, to the extent practicable, non-point source (NPs) pollution resulting from forest operations does not impair the attainment of water quality standards.

With respect to the temperature standard, surface water temperature management plans are required according to OAR 340-041-0026 when temperature criteria are exceeded and the waterbody is designated as water-quality limited under Section 303(d) of the Clean Water Act. In the case of state and private forestlands, OAR 340-041-0120 identifies the FPA rules as the surface water management plan for forestry

activities. The DEQ recognizes (through a Memorandum of Understanding with ODF) that the FPA provide the Best Management Practices (BMPs) for forest activities on non-federal forestland in Oregon.

ODF and DEQ statutes and rules also include provisions for adaptive management that provide for revisions to FPA practices where necessary to meet water quality standards. These provisions are described in ORS 527.710, ORS 527.765, ORS 183.310, OAR 340-041-0026, OAR 629-635-110, and OAR 340-041-0120. Current adaptive management efforts under several of the above statutes and rules are described in more detail following the discussion below on the roles of the BOF and EQC in developing BMPs that will achieve water quality standards.

ORS 527.765 Best management practices to maintain water quality.

(1) The State Board of Forestry shall establish best management practices and other rules applying to forest practices as necessary to insure that to the maximum extent practicable nonpoint source discharges of pollutants resulting from forest operations on forestlands do not impair the achievement and maintenance of water quality standards established by the Environmental Quality Commission for the waters of the state. Such best management practices shall consist of forest practices rules adopted to prevent or reduce pollution of waters of the state. Factors to be considered by the board in establishing best management practices shall include, where applicable, but not be limited to:

- (a) Beneficial uses of waters potentially impacted;
- (b) The effects of past forest practices on beneficial uses of water;
- (c) Appropriate practices employed by other forest managers;
- (d) Technical, economic and institutional feasibility; and
- (e) Natural variations in geomorphology and hydrology.

ORS 527.770 Good faith compliance with best management practices not violation of water quality standards; subsequent enforcement of standards.

A forest operator conducting, or in good faith proposing to conduct, operations in accordance with best management practices currently in effect shall not be considered in violation of any water quality standards. When the State Board of Forestry adopts new best management practices and other rules applying to forest operations, such rules shall apply to all current or proposed forest operations upon their effective dates.

There are currently extensive statutes and administrative rules that regulate forest management activities in the Snake River – Hells Canyon Subbasin, which address the key water quality issues of stream temperatures, riparian aquatic functions, and sediment dynamics. The following is a list of specific administrative rules describing the purpose and goals of the FPA towards the achievement and maintenance of water quality standards established by the EQC.

OAR 629-635-100 - Water Protection Rules; Purpose and Goals

- (3) The purpose of the water protection rules is to protect, maintain and, where appropriate, improve the functions and values of streams, lakes, wetlands, and riparian management areas. These functions and values include water quality, hydrologic functions, the growing and harvesting of trees, and fish and wildlife resources.
- (4) The water protection rules include general vegetation retention prescriptions for streams, lakes and wetlands that apply where current vegetation conditions within the riparian management area have or are likely to develop characteristics of mature forest stands in a "timely manner." Landowners are encouraged to manage stands within riparian management areas in order to grow trees in excess of what must be retained so that the excess may be harvested.
- (5) The water protection rules also include alternative vegetation retention prescriptions for streams to allow incentives for operators to actively manage vegetation where existing vegetation conditions are not likely to develop characteristics of mature conifer forest stands in a "timely manner."
- (6) OARs 629-640-400 and 629-645-020 allow an operator to propose site-specific prescriptions for sites where specific evaluation of vegetation within a riparian management area and/or the condition of the water of the state is used to identify the appropriate practices for achieving the vegetation and protection goals.

- (7) The overall goal of the water protection rules is to provide resource protection during operations adjacent to and within streams, lakes, wetlands and riparian management areas so that, while continuing to grow and harvest trees, the protection goals for fish, wildlife, and water quality are met.
- (a) The protection goal for water quality (as prescribed in ORS 527.765) is to ensure through the described forest practices that, to the maximum extent practicable, non-point source discharges of pollutants resulting from forest operations do not impair the achievement and maintenance of the water quality standards.
- (b) The protection goal for fish is to establish and retain vegetation consistent with the vegetation retention objectives described in OAR 629-640-000 (streams), OAR 629-645-000 (significant wetlands), and OAR 629-650-000 (lakes) that will maintain water quality and provide aquatic habitat components and functions such as shade, large woody debris, and nutrients.

OAR 629-640-000 - Vegetation Retention Goals for Streams; Desired Future Conditions

- (1) The purpose of this rule is to describe how the vegetation retention measures for streams were determined, their purpose and how the measures are implemented. The vegetation retention requirements for streams described in OAR 629-640-100 through OAR 629-640-400 are designed to produce desired future conditions for the wide range of stand types, channel conditions, and disturbance regimes that exist throughout forestlands in Oregon.
- (2) The desired future condition for streamside areas along fish use streams is to grow and retain vegetation so that, over time, average conditions across the landscape become similar to those of mature streamside stands. Oregon has a tremendous diversity of forest tree species growing along waters of the state and the age of mature streamside stands varies by species. Mature streamside stands are often dominated by conifer trees. For many conifer stands, mature stands occur between 80 and 200 years of stand age. Hardwood stands and some conifer stands may become mature at an earlier age. Mature stands provide ample shade over the channel, an abundance of large woody debris in the channel, channel-influencing root masses along the edge of the high water level, snags, and regular inputs of nutrients through litter fall.
- (3) The rule standards for desired future conditions for fish use streams were developed by estimating the conifer basal area for average unmanaged mature streamside stands (at age 120) for each geographic region. This was done by using normal conifer yield tables for the average upland stand in the geographic region, and then adjusting the basal area for the effects of riparian influences on stocking, growth and mortality or by using available streamside stand data for mature stands.
- (4) The desired future condition for streamside areas that do not have fish use is to have sufficient streamside vegetation to support the functions and processes that are important to downstream fish use waters and domestic water use and to supplement wildlife habitat across the landscape. Such functions and processes include: maintenance of cool water temperature and other water quality parameters; influences on sediment production and bank stability; additions of nutrients and large conifer organic debris; and provision of snags, cover, and trees for wildlife.
- (5) The rule standards for desired future conditions for streams that do not have fish use were developed in a manner similar to fish use streams. In calculating the rule standards, other factors used in developing the desired future condition for large streams without fish use and all medium and small streams included the effects of trees regenerated in the riparian management area during the next rotation and desired levels of instream large woody debris.
- (6) For streamside areas where the native tree community would be conifer dominated stands, mature streamside conditions are achieved by retaining a sufficient amount of conifers next to large and medium sized fish use streams at the time of harvest, so that halfway through the next rotation or period between harvest entries, the conifer basal area and density is similar to mature unmanaged conifer stands. In calculating the rule standards, a rotation age of 50 years was assumed for even-aged management and a period between entries of 25 years was assumed for uneven-aged management. The long-term maintenance of streamside conifer stands is likely to require incentives to landowners to manage streamside areas so that conifer reforestation occurs to replace older conifers over time.

- (7) Conifer basal area and density targets to produce mature stand conditions over time are outlined in the general vegetation retention prescriptions. In order to ensure compliance with state water quality standards, these rules include requirements to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.
- (8) For streamside areas where the native tree community would be hardwood dominated stands, mature streamside conditions are achieved by retaining sufficient hardwood trees. As early successional species, the long-term maintenance of hardwood streamside stands will in some cases require managed harvest using site specific vegetation retention prescriptions so that reforestation occurs to replace older trees. In order to ensure compliance with state water quality standards, these rules include requirements in the general vegetation retention prescription to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.
- (9) In many cases the desired future condition for streams can be achieved by applying the general vegetation retention prescriptions, as described in OAR 629-640-100 and OAR 629-640-200. In other cases, the existing streamside vegetation may be incapable of developing into the future desired conditions in a "timely manner." In this case, the operator can apply an alternative vegetation retention prescription described in OAR 629-640-300 or develop a site-specific vegetation retention prescription described in OAR 629-640-400. For the purposes of the water protection rules, "in a timely manner" means that the trees within the riparian management area will meet or exceed the applicable basal area target or vegetation retention goal during the period of the next harvest entry that would be normal for the site. This will be 50 years for many sites.
- (10) Where the native tree community would be conifer dominant stands, but due to historical events the stand has become dominated by hardwoods, in particular, red alder, disturbance is allowed to produce conditions suitable for the re-establishment of conifer. In this and other situations where the existing streamside vegetation is incapable of developing characteristics of a mature streamside stand in a "timely manner," the desired action is to manipulate the streamside area and woody debris levels at the time of harvest (through an alternative vegetation retention prescription or site specific vegetation retention prescription) to attain such characteristics more quickly.

The Water Protection Rules are an important component of the rules that are designed to achieve and maintain water quality standards. The rules identify seven geographic regions and distinguish between streams, lakes, and wetlands. The rules further distinguish each stream by size and type. Stream size is distinguished as small, medium, or large, based on average annual flow. Stream type is distinguished as fish use, domestic use, or neither.

Generally, no tree harvesting is allowed within 20 feet of all fish bearing, all domestic-use, and all other medium and large streams unless stand restoration is needed. In addition, all snags and downed wood must be retained in every riparian management area. Provisions governing vegetation retention are designed to encourage conifer restoration on riparian forestland that is not currently in the desired conifer condition. Future supplies of conifer on these sites are deemed desirable to support stream functions and to provide fish and wildlife habitat. The rules provide incentives for landowners to place large wood in streams to immediately enhance fish habitat. Other alternatives are provided to address site-specific conditions and large-scale catastrophic events.

The goal for managing riparian forests along fish-use streams is to grow and retain vegetation so that, over time, average conditions across the riparian landscape become similar to those of mature unmanaged riparian stands. This goal is based on the following considerations:

- (1) Mature riparian stands can supply large, persistent woody debris necessary to maintain adequate fish habitat. A shortage of large wood currently exists in streams on non-federal forestlands due to historic practices and a wide distribution of young, second growth forests. For most streams, mature riparian stands are able to provide more of the functions and inputs of large wood than are provided by young second-growth trees.

(2) Historically, riparian forests were periodically disturbed by wildfire, windstorms, floods, and disease. These forests were also impacted by wildlife such as beaver, deer, and elk. These disturbances maintained a forest landscape comprised of riparian stands of all ages ranging from early successional to old growth. At any given time, however, it is likely that a significant proportion of the riparian areas supported forests of mature age classes. This distribution of mature riparian forests supported a supply of large, persistent woody debris that was important in maintaining quality fish habitat.

The overall goals of the riparian vegetation retention rules along Type N and Type D streams are the following:

- Grow and retain vegetation sufficient to support the functions and processes that are important to downstream waters that have fish;
- Maintain the quality of domestic water; and
- Supplement wildlife habitat across the landscape.

These streams have reduced Riparian Management Area (RMA) widths and reduced basal area retention requirements as compared to similar sized Type F streams (Table 1). In the design of the rules this was judged appropriate based on a few assumptions. First, it was assumed that the amount of large wood entering Type N and D channels over time was not as important for maintaining fish populations within a given stream reach. And second, it was assumed that the future stand could provide some level of “functional” wood over time in terms of nutrient inputs and sediment storage. The validity of these assumptions needs to be evaluated over time through monitoring.

Table 1. Riparian Management Area widths for streams of various sizes and beneficial uses (OAR 629-635-310).

	Type F	Type D	Type N
<i>LARGE</i>	100 feet	70 feet	70 feet
<i>MEDIUM</i>	70 feet	50 feet	50 feet
<i>SMALL</i>	50 feet	20 feet	Apply specified water quality protection measures, and see OAR 629-640-200

For all streams that require an RMA, basal area targets are established that are used for any type of management within the RMA. These targets were determined based on the data that was available at the time, with the expectation that these targets could be achieved on the ground. There is also a minimum tree number requirement of 40 trees per 1000 feet along large streams (11-inch minimum diameter at breast height), and 30 trees per 1000 feet along medium streams (8-inch minimum diameter at breast height). The specific levels of large wood inputs that the rules are designed to achieve are based on the stream size and type. The biological and physical characteristics specific to a given stream are taken into account in determining the quantity and quality of large wood that is functional for that stream. Given the potential large wood that is functional for a given stream, a combination of basal area targets, minimum tree retention, buffer widths, and future regenerated stands and ingrowth are used to achieve the appropriate large wood inputs and effective shade for a given stream.

The expectation is that these vegetation retention standards will be sufficient towards maintaining stream temperatures that are within the range of natural variability. In the design of the Water Protection Rules shade data was gathered for 40 small non-fish-bearing streams to determine the shade recovery rates after harvesting. One to two years after harvest, 55 percent of these streams were at or above pre-harvest shade levels due to understory vegetation regrowth. Most of these streams had a bankfull width averaging less than six feet, and most shade was provided by shrubs and grasses within 10 feet of the bank. Since 1991 there has also been a 120-acre limit on a single clearcut size, which is likely to result in a scattering of harvested area across a watershed over time. In the development of the rules it was assumed that this combined with the relative rapid shade recovery along smaller non-fish-bearing streams would be adequate in protecting stream temperatures and reduce possible cumulative effects. For fish bearing streams it is

assumed that a 20-foot no-harvest area, combined with the tree retention requirements for the rest of the RMA, will be adequate to maintain shade levels necessary to achieve stream temperature standards. The monitoring program is currently collecting data to test these assumptions, evaluate the effectiveness of the rules, and evaluate whether or not water quality standards for temperature are being achieved.

In terms of sediment issues specific to forest roads, there are BMPs within the FPA specifically designed to regulate road design, construction and maintenance. The bulk of the BMPs are directed at minimizing sediment delivery to channels. The primary goals of the road rules are to: (1) protect the water quality of streams, lakes, and wetlands; (2) protect fish and wildlife habitat; and (3) protect forest productivity.

The Board of Forestry revised several BMPs related to road design when the new Water Protection Rules were adopted in the fall of 1994. Significant changes made to the road construction rules include the following:

- The requirement for operators not to locate roads in riparian management areas, flood plains, or wetlands unless all alternative locations would result in greater resource damage.
- The requirement for operators to design stream crossings to both minimize fill size and minimize excavation of slopes near the channel. A mandatory written plan is required for stream crossing fills over 15 feet deep.
- The requirement to design stream-crossing structures for the 50-year flow with no ponding, rather than the 25-year storm with no specification of allowable ponding.
- The requirement that stream crossing structures be passable by juvenile fish as well as adult fish.
- The requirement that fish must be able to access side channels.
- The requirement that stream structures constructed under these rules must be maintained for fish passage.

In determining the location of a new road, operators are required to avoid steep slopes, slides and areas next to channels or in wetlands to the extent possible. Existing roads should be used when possible, and stream crossings should be used only when essential. The design of the road grade must vary to fit the local terrain and the road width must be minimized. The operator must also follow specific guidelines for stream-crossing structures (listed above). Cross-drainage structures must be designed to divert water away from channels so that runoff intercepted by the road is dispersed onto the hillslope before reaching a channel. The specific method used is up to the operator, but the end result should be the dispersal of water running off of the road and the filtering of fine sediment before the water reaches waters of the state.

Construction and maintenance activities should be done during low water periods and when soils are relatively dry. Excavated materials must be placed where there is minimal risk of those materials entering waters of the state, and erodible surfaces must be stabilized. Landings must be built away from streams, wetlands and steep slopes.

Road maintenance is required on all active and inactive roads. Regardless of when a road was constructed, if the road has been used as part of an active operation after 1972, it is subject to all maintenance requirements within the current rules. Culverts must be kept open, and surface road drainage and adequate filtering of fine sediment must be maintained. If the road surface becomes unstable or if there is a significant risk of sediment running off of the road surface and entering the stream, road activity must be halted and the erodible area must be stabilized. Abandoned roads constructed prior to 1972 and not used for forest management since that time are not subject to Forest Practices regulatory authority.

All roads in use since 1972 must either be maintained or vacated by the operator. Vacated roads must be effectively barricaded and self-maintaining, in terms of diverting water away from streams and off of the former road surface, where erosion will remain unlikely. Methods for vacating roads include pulling stream-crossing fills, pulling steep side cast fills, and cross ditching. It is up to the landowner to choose between vacating a road and maintaining a road. If a road is not vacated, the operator is required to maintain the road under the current rules whether it is active or inactive, however they are not required to bring the design up to current standards outside of the normal maintenance and repair schedule.

The ODF has a monitoring program that is currently coordinating separate projects to monitor the effectiveness of the forest practice rules with regard to landslides, riparian function, stream temperature, chemical applications, sediment from roads, BMP compliance, and shade. The results from some of these projects have been released in the form of final reports and other projects will have final reports available in the spring of 2000, 2001 and beyond.

Voluntary measures are currently being implemented across the state under the Oregon Plan for Salmon and Watersheds (OPSW) to address water quality protection. These measures are designed to supplement the conifer stocking within riparian areas, increase large wood inputs to streams, and provide for additional shade. This is accomplished during harvest operations by (1) placing appropriate sized large wood within streams that meet parameters of gradient, width and existing wood in the channel; and (2) relocating in-unit leave trees in priority areas¹ to maximize their benefit to salmonids while recognizing operational constraints, other wildlife needs, and specific landowner concerns.

The measures include the following:

ODF 8S: Riparian Conifer Restoration

Forest practice rules have been developed to allow and provide incentives for the restoration of conifer forests along hardwood-dominated RMAs where conifers historically were present. This process enables sites capable of growing conifers to contribute conifer LWD in a timelier manner. This process will be modified to require an additional review process before the implementation of conifer restoration within core areas.

ODF 19S: Additional Conifer Retention along Fish-Bearing Streams in Core Areas

This measure retains more conifers in RMAs by limiting harvest activities to 25 percent of the conifer basal area above the standard target. This measure is only applied to RMAs containing a conifer basal area that is greater than the standard target.

ODF 20S: Limited RMA for Small Type N Streams in Core Areas

This measure provides limited 20 foot RMAs along all perennial or intermittent small Type N streams for the purpose of retaining snags and downed wood.

ODF 21S: Active Placement of large wood during Forest Operations

This measure provides a more aggressive and comprehensive program for placing large wood in streams currently deficient of large wood. Placement of large wood is accomplished following existing ODF/ODFW placement guidelines and determining the need for large wood placement is based upon a site-specific stream survey.

ODF 22S: 25 Percent In-unit Leave Tree Placement and Additional Voluntary Retention

This measure has one non-voluntary component and two voluntary components:

- (1) The State Forester, under statutory authority, will direct operators to place 25 percent of in-unit leave trees in or adjacent to riparian management areas on Type F and D streams.
- (2) The operator voluntarily locates the additional 75 percent in-unit leave trees along Type N, D or F streams, and
- (3) The State Forester requests the conifer component be increased to 75 percent from 50 percent.

ODF 61S: Analysis of "Rack" Concept for Debris Flows

OFIC members will conduct surveys to determine the feasibility and value of retaining trees along small type N streams with a high probability of debris flow in a "rack" just above the confluence with a Type F stream. The rack would extend from the RMA along the Type F stream up the Type N stream some distance for the purpose of retaining trees that have a high likelihood of delivery to the Type F stream.

ODF 62S: Voluntary No-Harvest Riparian Management Areas

¹ The Executive Order replaced the concept of "core areas" with "priority areas". See (1)(f) of the Executive Order (p.5).

Establishes a system to report and track, on a site-specific basis, when landowners voluntarily take the opportunity to retain no-harvest RMAs.

The voluntary management measures are implemented within priority areas. Several of the measures utilize in-unit leave trees and are applied in a “menu” approach to the extent in-unit leave trees are available to maximize their value to the restoration of salmonid habitat. The choice of menu measures is at the discretion of the landowner, but one or more of the measures is selected.

The measures can be described as either active restoration measures, or passive restoration measures that provide long-term large wood recruitment. Voluntary measures ODF 8S and 21S are active restoration activities. ODF 8 restores hardwood-dominated riparian areas back to a conifer-dominated condition, where appropriate, using a site-specific plan. Site-specific plans require additional consultation with the ODFW to minimize potential damage to the resource. They often result in conditions that are more protective of the resources than would occur without the site-specific plan. ODF 21S addresses large wood placement if stream surveys determine there is a need. Measures ODF 19S, 20S, 22S, and 62S provide future large wood recruitment through additional riparian protection. This additional protection is accomplished by retaining in-unit leave trees, snags, and downed wood within and along RMAs, and by changing the ratio of in-unit leave trees to 75 percent conifer.

The following application priority has been developed for OPSW voluntary measures for harvest units containing more than one stream type. The list establishes the general priority for placement of in-unit leave trees.

- (1) Small and medium Type F streams.
- (2) Non-fish bearing streams (Type D or Type N), especially small low-order headwater stream channels, that may affect downstream water temperatures and the supply of large wood in priority area streams.
- (3) Streams identified as having a water temperature problem in the DEQ 303(d) list of water quality limited waterbodies, or as evidenced by other available water temperature data; especially reaches where the additional trees would increase the level of aquatic shade.
- (4) Potentially unstable slopes where slope failure could deliver large wood.
- (5) Large Type F streams, especially where low gradient, wide floodplains exist with multiple, braided meandering channels.
- (6) Significant wetlands and stream-associated wetlands, especially estuaries and beaver pond complexes, associated with a salmon core area stream.

The Oregon Plan also has voluntary measures addressing sediment issues related to forest roads. Many forest roads built prior to the development of the FPA or prior to the current BMPs continue to pose increased risk to fish habitat. Industrial forest landowners and state forest lands are currently implementing the Road Hazard Identification and Risk Reduction Project, measures ODF 1S and ODF 2S, to identify risks to salmon from roads and address those risks. The purposes of this project are:

- (1) Implement a systematic process to identify road-related risks to salmon and steelhead recovery.
- (2) Establish priorities for problem solution.
- (3) Implement actions to reduce road related risks.

The Road Hazard Identification and Risk Reduction Project is a major element of the Oregon Plan. The two major field elements of this project are (1) the surveying of roads using the Forest Road Hazard Inventory Protocol, and (2) the repairing of problem sites identified through the protocol. Road repairs conducted as a result of this project include improving fish passage, reducing washout potential, reducing landslide potential, and reducing the delivery of surface erosion to streams.

Roads assessed by this project include all roads on Oregon Forest Industry Council member forestland, plus some other industrial and non-industrial forestland, regardless of when they were constructed. Industrial forest landowners have estimated spending approximately \$13 million a year, or \$130 million over the next 10 years, on this project for the coastal ESUs alone. However, the effort is not limited to nor bound by this funding estimate. Funding for the implementation for this measure within the other ESUs will be reflective of road problems found.

Under ODF 2S, the State Forest Lands program has spent over \$2.5 million during the last biennium (1997-1999) for the restoration of roads, replacement of culverts and other stream crossing structures damaged by the 1996 storm. State Forest Lands are also proposing to spend an additional \$2.5 million dollars in each of the next two biennia to improve roads, including stream-crossing structures. This effort will upgrade approximately 130 miles of road in each biennium.

In addition to ODF 1S & 2S, there are additional measures under the Oregon Plan that address road management concerns:

ODF 16S - Evaluation of the Adequacy of Fish Passage Criteria: Establish that the criteria and guidelines used for the design of stream crossing structures pass fish as intended under the goal.

ODF 34S - Improve Fish Passage BMPs on Stream Crossing Structures: Ensure that all new stream crossing structures on forestland installed or replaced after the fall of 1994 will pass both adult and juvenile fish upstream and down stream.

Adaptive Management Process

By statute, forest operators conducting operations in accordance with the BMPs are considered to be in compliance with Oregon's water quality standards. The 1994 Water Protection Rules were adopted with the approval of the Environmental Quality Commission as not violating water quality standards. However, there are several provisions within the FPA and rules that require adaptive management.

The ODF is currently in the process of reviewing the effectiveness of the forest practice rules. In January of this year the Governor of Oregon signed Executive Order no. EO 99-01 that directed the Oregon Board of Forestry, with the assistance of an advisory committee, to determine to what extent changes to forest practices are needed to meet state water quality standards and protect and restore salmonids. The committee is directed to consider both regulatory and non-regulatory approaches to water quality protection. To carry out this charge, an ad hoc advisory committee is in the process of developing four separate issue papers on the following topics:

- (1) Fish passage restoration and water classification
- (2) Forest roads
- (3) Riparian functions
- (4) Landslides

The committee represents diverse interests, including environmental, industrial, non-industrial, county, and public advocates. In addition to ODF technical staff, the Oregon Department of Environmental Quality (DEQ) and Oregon Department of Fish and Wildlife (ODFW) have technical staff participating in the process. The committee expects to make recommendations to the Board of Forestry in early 2000. The Board will then consider the recommendations in determining whether revisions to the FPA and additional voluntary approaches are necessary consistent with ORS 527.710.

As the designated management agency (DMA) for water quality management on nonfederal forestlands, ODF is also working with the DEQ through a memorandum of understanding (MOU) signed in June of 1998. This MOU was designed to improve the coordination between the ODF and the DEQ in evaluating and proposing possible changes to the forest practice rules as part of the Total Maximum Daily Load process. The purpose of the MOU is also to guide coordination between the ODF and DEQ regarding water quality limited streams on the 303d list. An evaluation of rule adequacy will be conducted (also referred to as a "sufficiency analysis") through a water quality parameter by parameter analysis. This statewide demonstration of forest practices rule effectiveness in the protection of water quality will address the following specific parameters and will be conducted in the following order²:

- (1) Temperature (estimated draft report target completion date Spring, 2000)
- (2) Sediment and turbidity (estimated date Fall, 2000)
- (3) Aquatic habitat modification (estimated date Spring, 2001)

² The estimated completion dates listed here differ from those dates listed in the MOU. Due to unforeseen circumstances the DEQ and ODF have agreed to revise the dates.

- (4) Bio-criteria (estimated date Fall, 2001)
- (5) Other parameters (estimated date Spring, 2002)

These sufficiency analyses will be reviewed by peers and other interested parties prior to final release. The analyses will be designed to provide background information and techniques for watershed-based assessments of BMP effectiveness and water quality assessments for watershed with forest and mixed land uses. Once the sufficiency analyses are completed, they will be used as a coarse screen for common elements applicable to each individual TMDL to determine if forest practices are contributing to water quality impairment within a given watershed and to support the adaptive management process.

There may be circumstances unique to a watershed or information generated outside of the statewide sufficiency process that need to be considered to adequately evaluate the effectiveness of the BMPs in meeting water quality standards. Information from the TMDL, ad hoc committee process, ODF Water Protection Rule effectiveness monitoring program, and other relevant sources may address circumstances or issues not addressed by the statewide sufficiency process. This information will also be considered in making the FPA sufficiency determination. ODF and DEQ will share their understanding of whether water quality impairment is due to current forest practices or the long-term legacy of historic forest management practices and/or other practices. The two agencies will then work together and use their determinations to figure out which condition exists (a, b, c, or d in the MOU). The MOU describes the appropriate response depending on which condition exists.

Currently ODF and ODEQ do not have adequate data to make a collective determination on the sufficiency of the current FPA BMPs in meeting water quality standards within the Snake River - Hells Canyon Subbasin. This situation most closely resembles the scenario described under condition c of the ODF/DEQ MOU. Therefore, the current BMPs will remain as the forestry component of the TMDL. The draft versions of the statewide FPA sufficiency analyses for the various water quality parameters will be completed as noted above. The proposed Snake River - Hells Canyon TMDLs will be completed December 31, 2001. Data from an ODF/DEQ shade study will be collected over the summer of 1999 and a final report will be completed in the summer of 2000. Information from the ad hoc committee advisory process may be available by summer of 2000. Information from these efforts, along with other relevant information provided by the DEQ, will be considered in reaching a determination on whether the existing FPA BMPs meet water quality standards within the Tualatin basin.

The above adaptive management process may result in findings that indicate changes are needed to the current forest practice rules to protect water quality. Any rule making that occurs must comply with the standards articulated under ORS 527.714(5). This statute requires, among other things, that regulatory and non-regulatory alternatives have been considered and that the benefits provided by a new rule are in proportion to the degree that existing forest practices contribute to the overall resource concern.

Appendix 2 – Oregon’s Agricultural Water Quality Management Plan and Rules

In Oregon agricultural water quality management plans (1010 Plans) will be submitted according to the schedule set forth by the Oregon Department of Agriculture. ODA statutes and rules include provisions relating to water quality on agricultural lands applicable to the SR-HC TMDL, specifically OAR 603-095-0900 through 0960 and OAR 603—95-1800 through 1860.

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Appendix 3 – Oregon Department of Transportation

TMDL Implementation Plan for Oregon's State Transportation System

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ODOT TMDL Watershed Management Plan

The Oregon Department of Transportation (ODOT) plan addresses the requirements of a Total Maximum Daily Load (TMDL) allocation for pollutants associated with the ODOT system. This statewide approach for an ODOT TMDL watershed management plan would address specific pollutants, but not specific watersheds. Instead, this plan would demonstrate how ODOT incorporates water quality into project development, construction, and operations and maintenance of the state and federal transportation system, thereby meeting the elements of the National Pollutant Discharge Elimination System (NPDES) program, and the TMDL requirements.

ODOT has partnered with DEQ in the development of several watershed management plans. By presenting a single, statewide, management plan, ODOT:

- Streamlines the evaluation and approval process for the watershed management plans
- Provides consistency to the ODOT highway management practices in all TMDL watersheds.
- Eliminates duplicative paperwork and staff time developing and participating in the numerous TMDL management plans.

Temperature and sediment are the primary concerns for pollutants associated with ODOT systems that impair the waters of the state. DEQ is still in the process of developing the TMDL water bodies and determining pollutant levels that limit their beneficial uses. As TMDL allocations are established by watershed, rather than by pollutants, ODOT is aware that individual watersheds may have pollutants that may require additional consideration as part of the ODOT watershed management plan. When these circumstances arise, ODOT will work with DEQ to incorporate these concerns into the statewide plan.

ODOT Limitations

The primary mission of ODOT is to provide a safe and effective transportation system, while balancing the requirements of environmental laws. ODOT is a dedicated funding agency, restricted by the Oregon Constitution in its legal authority and use of resources in managing and operating the state and federal highway system. ODOT can only expend gas tax resources within the right of way for the operation, maintenance and construction of the highway system.

ODOT and DEQ recognize that the ODOT system has the potential to negatively impact the beneficial uses of the waters of the state, primarily through surface water runoff. However, removal of vegetative cover to provide for safety, and undermining of the road associated with bank failure may impact temperature and sediment allocations.

As defined in the TMDL program, ODOT is a Designated Management Agency (DMA) because highways have the potential to pollute waterways and negatively impact watershed health. With this definition of a DMA, ODOT is required to participate in developing and implementing watershed management plans that will reduce the daily pollutant loads generated from ODOT highways to acceptable TMDL levels.

ODOT is not a land use or natural resource management agency. ODOT has no legal authority or jurisdiction over lands, waterways, or natural resources that are located outside of its right of way. ODOT's contribution to the TMDL management plan can only be directed at the development, design, construction, operations and maintenance of the ODOT system.

Related Clean Water Regulations

There are various water quality laws and regulations that overlap with the TMDL program. In a TMDL Memorandum of Agreement with the Environmental Protection Agency (EPA) (July 2000), DEQ states that; "DEQ will implement point source TMDLs through the issuance or re-issuance of National Pollutant Discharge Elimination System (NPDES) permits". The DEQ NPDES municipal permit program was established in 1994 and requires owners and operators of public stormwater systems to reduce or eliminate stormwater pollutants to the maximum extent practicable.

On June 9, 2000, ODOT received an NPDES permit from DEQ that covers all new and existing discharges of stormwater from the Municipal Separated Storm Sewer associated with the ODOT owned and maintained facilities and properties located within the highway right of way and maintenance facilities for all basins in Oregon. This permit required the development of a statewide ODOT stormwater management plan.

Other environmental regulations that overlap with the intent of the TMDL program include the federal and state Endangered Species Act, Corps of Engineers Wetland 404 permit regulations, state cut and fill removal laws, erosion control regulations, ground water protection rules, etc. Many federal, state, and local agencies join DEQ in administering and enforcing these various environmental regulations related to water quality.

ODOT Programs

ODOT established a Clean Water program in 1994 that works to develop tools and processes that will minimize the potential negative impacts of activities associated with ODOT facilities on Oregon's water resources. The ODOT Clean Water program is based on developing and implementing Best Management Practices (BMPs) for construction and maintenance activities. ODOT has developed, or is developing the following documents, best management practices, or reviews, that reduce sediment and temperature impacts:

- **ODOT Routine Road Maintenance Water Quality and Habitat Guide, Best Management Practices, July 1999 (ESA 4(d) Rule)**

ODOT has worked with National Marine Fisheries Service (NMFS) and Oregon Department of Fish and Wildlife (ODFW) to develop Best Management Practices (BMPs) that minimize negative environmental impacts of routine road maintenance activities on fish habitat and water quality. The National Marine Fisheries Service has determined that routine road maintenance, performed under the above mentioned guide, does not constitute a 'take' of anadromous species listed under the federal Endangered Species Act, and therefore additional federal oversight is not required. This determination has been finalized as part of the Federal Register, Volume 65, Number 132, dated Monday, July 10, 2000, pages 42471-42472. In addition, the Oregon Department of Fish and Wildlife has determined that the guide, and BMPs are adequate to protect habitat during routine maintenance activities.

- **NPDES Municipal Separated Storm Sewer System (MS4) Permit**

ODOT worked with DEQ to develop a statewide NPDES MS4 permit and stormwater management program that reduces pollutant loads in the ODOT stormwater system. The permit was issued to ODOT on June 9, 2000.

- **NPDES 1200CA Permit**

ODOT has developed an extensive erosion control program that is implemented on all ODOT construction projects. The program addresses erosion and works to keep sediment loads in surface waters to a minimum. ODOT currently holds 5 regional permits that cover highway construction.

- **Erosion and Sediment Control Manual**

ODOT Geotechnical/Hydraulic staff have developed erosion and sediment control manuals and training for construction and maintenance personnel. Included in the manual are designs for different types of erosion control measures.

- **National Environmental Policy Act (NEPA) Reviews**

ODOT is an agent of the Federal Highway Administration; consequently, ODOT must meet NEPA requirements during project development. Included in the project development process are reviews to avoid, minimize and mitigate project impacts to natural resources, including wetlands and waters of the state.

- **Integrated Vegetation Management (IVM) District Plans**

ODOT works with the Oregon Department of Agriculture and other agencies to develop activities that comply with regulations that pertain to the management of roadside vegetation. Vegetation management BMPs can directly effect watershed health. Each ODOT district develops an integrated vegetation management plan.

- **Forestry Program**

ODOT manages trees located within its right of way in compliance with the Oregon Forest Practices Act and other federal, state, and local regulations. Temperature, erosion, and land stability are watershed issues associated with this program. ODOT is currently working with ODFW on a prototype for managing hazardous trees along riparian corridors.

- **Cut/Fill Slope Failure Programmatic Biologic Assessment**

ODOT has been in formal consultation with the National Marine Fisheries Service, the US Fish and Wildlife Service and the Oregon Department of Fish and Wildlife Service in the development of a programmatic biological assessment for how ODOT will repair cut/fill slope failures in riparian corridors. The draft document outlines best management practices to be used in stabilizing failed stream banks, and bio-engineered design solutions for the failed banks.

- **Disposal Site Research Documentation and Programmatic Biological Assessment**

ODOT has been working with DEQ in researching alternatives and impacts associated with the disposal of materials generated from the construction, operation and maintenance of the ODOT system. ODOT has begun the process of entering into formal consultation with NMFS, USFWS, and ODFW on disposing of clean fill material.

ODOT TMDL Pollutants

ODOT and DEQ have identified temperature and sediment as the primary TMDL pollutants of concern associated with highways. While DEQ may identify other TMDL pollutants within the watershed, many historical pollutants, or pollutants not associated with ODOT activities, are outside the control or responsibility of ODOT. In some circumstances, such as historical pollutants within the right of way, it is expected that ODOT will control these pollutants through the best management practices associated with sediment control. ODOT is expecting that by controlling sediment load these TMDL pollutants will be controlled. Research has indicated that controlling sediment also controls heavy metals, oils and grease, and other pollutants.

Oregon's limited summer rainfall makes it highly unlikely that ODOT stormwater discharges elevate watershed temperatures. Management of roadside vegetation adjacent to waterways can directly effect water temperature. ODOT has begun to incorporate temperature concerns into its vegetation management programs and project development process.

Other TMDL concerns, such as dissolved oxygen, or chlorophyll A, can be associated with increased temperature. These TMDLs are not associated with the operation and maintenance of the transportation system, and are outside the authority of ODOT. Specific TMDL concerns that are directly related to the transportation system will be incorporated into the ODOT management plan.

ODOT NPDES characterization monitoring indicates ODOT pollutant levels associated with surface water runoff are below currently developed TMDL standards. This indication is based on ODOT 1993-95 characterization monitoring and current TMDLs.

Requirements of a TMDL Implementation Plan (IP)

Designated Management Agencies appointed by DEQ are required to develop a watershed management plan once the TMDL for the watershed is defined. EPA and DEQ have listed the following requirements as essential elements of a watershed TMDL Plan:

- 1) Proposed management measures tied to attainment of the TMDL. This will include a list of sources by category or sub-category of activity;
- 2) Timeline for implementation, including a schedule for revising permits, and a schedule for completion of measurable milestones (including appropriate incremental, measurable water quality targets and milestones for implementing control actions);
- 3) Timeline for attainment of water quality standards, including an explanation of how implementation is expected to result in the attainment of water quality standards;

- 4) Identification of responsible participants demonstrating who is responsible for implementing the various measures;
- 5) Reasonable assurance of implementation;
- 6) Monitoring and evaluation, including identification of parties responsible for monitoring, and a plan and schedule for revision of the TMDL and/or implementation plan;
- 7) Public involvement;
- 8) Maintenance of effort over time;
- 9) Discussion of cost and funding;
- 10) Citation to legal authorities under which the implementation will be conducted.

1) Proposed Management Measures tied to attainment of TMDLs.

ODOT has two business lines: project development and construction, and maintenance. There are management measures, processes, requirements and reviews included with each business line that are tied to the TMDL programs. These include:

- The ODOT MS4 NPDES permit and permit application: addresses sediment and temperature TMDL, includes project development and construction, and maintenance.
- The ODOT NPDES 1200 CA Permit: addresses sediment TMDL for construction.
- The ODOT Erosion and Sediment Control Manual: addresses sediment TMDL for construction and maintenance.
- The ODOT Routine Road Maintenance Water Quality and Habitat Guide, Best Management Practices, July 1999: addresses sediment and temperature TMDL.
- National Environmental Policy Act: addresses sediment and temperature TMDL, and habitat issues.
- Endangered Species Act requirements for project development: addresses sediment and temperature TMDL, and habitat issues.

2) Timeline for Implementation

ODOT already implements many water quality management measures as directed by state and federal law. Implementation timelines for currently developing measures are described in ODOT's MS4 NPDES permit. The ODOT MS4 permit was recently issued and is valid until May 31, 2005. ODOT's regional construction permits (1200 CA) are scheduled for renewal in December 2000.

3) Timeline for Attainment of Water Quality Standards

The complete attainment of load allocations applicable to ODOT corridors may not be feasible, certainly in the short term, and likely in the long term due to safety concerns and other important factors. However, ODOT expects to implement every practicable and reasonable effort to achieve the load allocations when considering new or modifications to existing corridors, and changes in operation and maintenance activities.

4) Identification of Responsible Participants

Implementing the ODOT best management measures is the responsibility of every ODOT employee. ODOT Managers are held accountable for ensuring employees and actions meet agency policy, and state and federal law, including the Clean Water Act.

5) Reasonable Assurance of Implementation

ODOT is required by its state NPDES MS4 permit to implement a stormwater management plan. In addition, as a federally funded agency, ODOT is required to comply with the Endangered Species act and the Clean Water Act as part of project development. Recent agreements with NMFS require ODOT to implement best management practices for routine road maintenance.

6) Monitoring and Evaluation (see MS4 Permit Application)

ODOT's monitoring and evaluation program is tied to performing research projects that address best management practices and effectiveness of the practices.

7) Public Involvement

DEQ held public hearings on the ODOT MS4 Stormwater Management Plan throughout Oregon. In addition, NMFS held a series of public hearings on the ESA 4(d) rule, which included the ODOT Routine Road

Maintenance Best Management Practices. ODOT project development undergoes a public involvement process that includes review by regulating agencies, and public hearings and meetings.

8) Maintenance of Effort Over Time

The elements of the ODOT water quality and habitat programs are bound in state and federal law, and state and agency directives. Consequently, the ODOT programs are standard operating practice.

9) Discussion of Cost and Funding

ODOT revenue comes primarily from dedicated funds collected as state and federal gasoline taxes. The Oregon Constitution dedicates taxes associated with motor vehicle fuel, and the ownership, operation and use of motor vehicles for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways. Consequently, ODOT is unable to expend resources outside its rights of way, or on activities not directly related to ODOT highways. ODOT construction projects are funded through a variety of Federal Highway Administration funding programs, including the Transportation Equity Act (TEA-21), state gas tax dollars, local and matching funds and bond.

ODOT budgets are identified the preceding year for the following biennium. Each ODOT section or district budgets as necessary to fulfill the requirements of its identified programs. ODOT determines the budget for its MS4 permit as program needs develop and as agency funds allow. ODOT Office of Maintenance, through the Clean Water/Salmon Recovery Program allocates funds to maintenance forces for betterment projects that improve water quality and salmon habitat.

The Oregon Transportation Commission and the Oregon State Legislature approve the ODOT budget.

10) Citation to Legal Authorities - See MS4 Permit Application
ODOT has legal authority only over ODOT right of way.

Conclusion

ODOT programs are adaptive and are expected to change as new information becomes available. ODOT will continue to work with the ODEQ, NMFS, USFWS, and ODFW in best management practices, research opportunities, training, etc. The ODOT program meets the requirements of the TMDL management plans, and will be attached as appropriate to individual watershed plans.

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Appendix 4 – Federal Land Management Agencies TMDL Implementation Plan

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Standards and Guidelines and Best Management Practices in Use on Lands Administered by the U.S. Forest Service in the Snake River/Hells Canyon Drainage Area

Federal Forest Lands

All management activities on federal lands managed by the U.S. Forest Service (USFS) in the Snake River/Hells Canyon drainage area must follow standards and guidelines (S&Gs) as listed in the respective Forest Land Use and Management Plans (LRMPs), as amended, for the Wallowa-Whitman, Payette, and Nez Perce National Forests. Additionally, forest management activities will use Best Management Practices (BMPs) as defined in various Federal and State laws such as the Implementation Plan for 208 (Water Pollution Control Act, PL 92-500, as amended). Specific Stand Management Unit (SMU) Constraints and Mitigation Measures identified in the Wallowa-Whitman NF Watershed Management Handbook are used when various situations are encountered during project layout.

A significant LRMP amendment affecting USFS land management was the implementation of interim strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California; otherwise known as PACFISH (USFS 1995). This amendment added further protection to anadromous fish and their habitat following their listing under the Federal Endangered Species Act (ESA).

Other sources of guidance for managing the National Forests are derived from the USFS's obligations under ESA. Because the Forests manage ESA listed species and critical habitat, any activity the Forest authorizes is reviewed by the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (FWS), or both. On-going Forest actions and LRMPs are also reviewed by NMFS and/or FWS whenever a new species receives Federal listing status under ESA as in the case of the recent Bulltrout and Steelhead listings (NMFS, FWS 1998). After review of proposed actions, management guidance to the USFS can be either Conservation Recommendations or non-discretionary Terms and Conditions when a Biological Opinion is issued by the regulatory agencies.

PACFISH

The PACFISH revision to the Wallowa-Whitman LRMP provides interim direction for establishment and management of Riparian Habitat Conservation Areas (RHCAs) and S&Gs for Key Watersheds. All National Forest Service (NFS) Watersheds in the Grande Ronde River Basin have been designated as Key Watersheds. The PACFISH RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by: (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams, (2) providing root strength for channel stability, (3) shading the stream, and (4) protecting water quality. Interim buffer widths are described as follows:

1. Fish-bearing streams: Includes the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge; or to the outer edges of the 100-year floodplain; or to the outer edges of riparian vegetation; or to the distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.
2. Permanently flowing non-fish bearing streams: Includes the stream and the areas of the active stream channel of the 100-year flood plain; or a distance equal to the height of one site-potential tree; or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.
3. Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Includes the waterbody and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetlands pond or lake, whichever is greatest.
4. Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone

areas: At a minimum, these widths must include: The extent of landslides and landslide-prone areas; the intermittent stream channel and the area to the top of the inner gorge; the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation; the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree; or 100 feet slope distance, whichever is greatest.

Standards and Guidelines

Specific and general S &Gs found in the Forest LRMP, PACFISH, and Biological Opinions are applied to various National Forest management activities such as Timber Management, Roads Management, Range Management, and Fire and Fuels Management. Primary S&Gs are listed by management activity and include:

Timber Management:

1. Prohibit timber harvest or fuelwood cutting in RHCAs, except as described (see below). Do not include RHCAs in the land base used to determine the allowable sale quantity (ASQ), but any volume harvested can contribute to the timber sale program (USFS 1995). Exceptions to harvesting timber in RHCAs include:
 - Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in RHCAs only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other riparian management objectives (RMOs), and where adverse effects on listed anadromous fish can be avoided. For watersheds with listed salmon or designated critical habitat, complete a Watershed Analysis prior to salvage cutting in RHCAs (USFS 1995).
 - Apply silviculture practices for RHCAs to acquire desired vegetation characteristics where needed to attain RMOs, and in a manner that does not retard attainment of RMOs and that avoids adverse effects on listed anadromous fish.
2. Watershed analysis is required (PACFISH) prior to salvage cutting within RHCAs in watersheds with designated critical habitat. If management activities are planned within a Priority Watershed, the NMFS suggests that the potential significance of adverse effects to salmon and their habitat is heightened. Any proposed salvage or silvicultural activities within RHCAs that pose more than a *de minimis* (the least) risk of adverse effects to listed salmon or critical habitat need to demonstrate clearly that the actions will avoid adverse effects to salmon and their habitat and will not retard or prevent attainment and maintenance of ecological goals and RMOs. Examples of actions that pose more than a *de minimis* risk in RHCAs include: a) machinery-related ground disturbance; b) cutting of live fire-resistant tree species (e.g. ponderosa pine, Douglas western larch and lodgepole pine); c) cutting of any native species of trees or shrubs that are contributing shade to the stream; and d) cutting or removal of any large trees (defined as any tree species older than 150 years or with a diameter at breast height of greater than 20 inches) from RHCAs that could contribute to maintaining or restoring a natural regime of large woody debris recruitment (NMFS 1995).
3. For new/proposed timber sales, it is recommended the USFS should evaluate equivalent clearcut area (ECA) in Priority Watersheds. If the existing ECA exceeds 15% of the potentially forested area, a watershed analysis should be conducted prior to initiating actions that would increase ECA. Actions that would increase ECA should proceed after watershed analysis only if there is low to de minimis risk of adversely affecting fish habitat and if attainment and maintenance of ecological goals and RMOs will not be retarded or prevented. For proposed/new actions, watershed analysis should be conducted prior to reducing RHCA widths in Priority Watersheds (NMFS 1995).

Roads Management:

1. For each existing or planned road, meet RMOs and avoid adverse effects on listed anadromous fish by: completing Watershed Analysis or site specific analysis prior to construction of new roads or landings in

RHCAs, minimizing road and landing locations ins, initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:

- a. Road design criteria, elements, and standards that govern construction and reconstruction, road management objectives for each road, criteria that govern road operation, maintenance, and management, requirements for pre-, during-, and post-storm inspections and maintenance, regulation of traffic during wet periods to minimize erosion and sediment delivery and to accomplish other objectives, implementation and effectiveness monitoring plans for road stability, drainage, and erosion control, and mitigation plans for road failures;
 - b. Avoid sediment delivery to streams from road surfaces; outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe, route road drainage away from potentially unstable stream channels, fills and hillslopes. Avoiding disruption of natural flow paths; and
 - c. Avoid sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in watersheds containing designated critical habitat for listed anadromous fish.
2. Determine the influence of each road on the RMOS. Meet RMOs and avoid adverse effects on listed anadromous fish by:
- a. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of RMOS, or do not protect designated critical habitat for listed anadromous fish from increased sedimentation;
 - b. Prioritize reconstruction based on current and potential damage to listed anadromous fish and their designated critical habitat, the ecological value of the riparian area affected, and the feasibility of options such as helicopter logging and road relocation out of RHCAs;
 - c. Close and stabilize, or obliterate and stabilize roads not needed for future management. Prioritize these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat, and the ecological value of the riparian resources affected; and
 - d. Construct new, and improve existing culverts bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/pose a substantial risk to riparian conditions.
3. Design, construct, operate, and maintain roads and trails of the forest transportation system based on resource objectives and intended uses, considering safety, total cost of transportation and impacts on the land.
4. Reestablish vegetative cover on obliterated roads by natural processes, where possible, or supplement by such means as scarifying, ditching, contouring, and seeding.
5. Design and maintain road drainage to prevent the influx of significant amounts of road sediment runoff into streams.
6. Avoid the use of heavy equipment within riparian ecosystems. When such use is unavoidable the activity will include mitigation measures designed to minimize adverse effects on the riparian zone and downstream values. Ground disturbing activities will normally be limited to 10% exposed soil or less within riparian ecosystems.
7. Protect water quality in all aspects of road and trail system management. Use practices, which will avoid or minimize sediment production from new road construction and will correct existing sediment sources.

8. Road drainage should be discharged where sediment can settle out before reaching a stream channel.
9. Road closure objectives include closures to prevent casual use in order to minimize sediment production and to effectively mitigate past impacts in order to put the area back into vegetative production.
10. The Biological Opinion (NMFS 1995) states that PACFISH guidelines for road management generally were adequate. Guidelines prioritize road restoration and management actions for Priority watersheds.
 - For proposed/new roads, where road density is greater than 2 miles/square mile in Priority Watersheds, the USFS should reduce road mileage and emphasize road closure, obliteration, and revegetation. (NMFS 1995)
 - For ongoing road development actions, the USFS should demonstrate that new roads are being offset by concomitant reductions in road mileage and road restoration in Priority Watersheds. (NMFS 1995)
11. Road Management Plans and Transportation Management Plans required by the interim PACFISH guidance should be completed and implemented in Priority Watersheds as soon as feasible. The status of these plans, schedules for completion, and effects of not completing these plans should be analyzed and described in the EISs for ecosystem management. The EISs should include a strategy for completing these plans. (NMFS 1995).

Fire Management

- Design fuel treatment and fire suppression strategies, practices, and actions as not to prevent attainment of RMOs, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function, listed anadromous fish, or designated critical habitat.
- Design prescribed burn projects and prescriptions to contribute to the attainment of the RMOs.
- Re-establish vegetation following wild fire or management activities where necessary to prevent excessive erosion.

Range Management

- Adjust grazing practices (e.g. length of grazing season, stocking levels, timing of grazing, etc.) to eliminate impacts that are inconsistent with attainment of Riparian Management Objectives. If adjusting practices is not effective, eliminate grazing (GM-1).
- Locate new livestock handling and/or management facilities outside Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that Riparian Management Objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities (GM-2).
- Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will assure Riparian Management Objectives are met (GM-3).
- Adjust wild horse and burro management to eliminate impacts that are inconsistent with attainment of Riparian Management Objectives (GM-4).

Recreation Management

- Design, construct, and operate recreation facilities, including trails and dispersed sites, within Riparian Habitat Conservation Areas in a manner that contributes to attainment of the Riparian Management Objectives. For existing recreation facilities inside Riparian Habitat Conservation

Areas, assure that Riparian Management Objectives are met. Where Riparian Management Objectives cannot be met, require relocation or closure of recreation facilities (RM-1).

- Adjust dispersed and developed recreation practices that are inconsistent with attainment of Riparian Management Objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy (RM-2).
- Wild and Scenic Rivers, Wilderness, and other Recreation Management plans will address attainment of Riparian Management Objectives (RM-3).

Minerals Management

- If the Notice of Intent indicates a mineral operation could affect attainment of Riparian Management Objectives, require a reclamation plan, approved Plan of Operations (or other such governing document), and reclamation bond. Impacts that cannot be avoided will be reclaimed after operations to as near the pre-mining condition as practicable to meet Riparian Management Objective. Reclamation Plans will contain measurable attainment and bond release criteria for each reclamation activity (MM-1).
- Locate structures, support facilities, and roads outside Riparian Habitat Conservation Areas. Where no alternative to siting facilities in Riparian Habitat Conservation Areas exists, locate in a way compatible with Riparian Management Objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. When a road is no longer required for mineral or land management activities, it will be closed, obliterated, and stabilized (MM-2).
- Prohibit solid and sanitary waste facilities in Riparian Habitat Conservation Areas. If no practicable alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Habitat Conservation Areas exists, and releases can be prevented and stability can be ensured, then (MM-3):
 - a. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
 - b. locate and design the waste facilities using best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Habitat Conservation Areas.
 - c. monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed.
 - d. reclaim waste facilities after operations to assure chemical and physical stability and to meet the Riparian Management Objectives.
 - e. require reclamation bonds adequate to ensure long-term chemical and physical stability of mine waste facilities.
- For leasable minerals, prohibit surface occupancy within Riparian Habitat Conservation Areas for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and Riparian Management Objectives can be met. Adjust the operating plans of existing contracts to eliminate impacts that are inconsistent with attainment of Riparian Management Objectives (MM-4).
- Sand and gravel mining and extraction within Riparian Habitat Conservation Areas will occur only if Riparian Management Objectives can be met (MM-5).

- Develop inspection and monitoring requirements for mineral activities. Evaluate the results of inspection and monitoring to modify mineral plans, leases or permits as needed to eliminate impacts that are inconsistent with attainment of Riparian Management Objectives (MM-6).

General Management:

The S&G and BMPs that generally apply to all categories of Forest management include:

- Maintain natural large woody debris, plus tree needed for future supply, to protect or enhance stream channel and bank structure, enhance water quality, and provide structural fish habitat within all Streamside Management Unit (SMU) classes.
- Enhance streambank vegetation and/or large woody debris where it can be effective in improving channel stability of fish habitat.
- Give areas in which water quality or channel stability are being adversely impacted high Priority for treatment to minimize the effects of the impact or to correct the impacting activity.
- Give maintenance of soil productivity and stability priority over uses described or implied in all other management direction, standards, or guidelines.
- Give management and enhancement of water quality, protection of watercourses and streamside management units, and fish habitat priority over other uses described or implied in other management standards, or guidelines.
- In all project environmental analyses address the presence of, and the potential impacts to, any wetlands within the project area. Particular attention will be paid to protection of springs during road location, timber sale plans, and range allotment management plans. Adverse impacts to wetlands will be avoided or mitigated.
- Give preferential consideration to resources such as fish, wildlife and vegetation and water that are dependent upon riparian areas over other resources in action within or affecting riparian areas.
- Meet Water Quality Standards for waters of the State of Oregon (Oregon Administrative Rules, Chapter 340-41) through planning, application, and monitoring of BMPs in conformance with the Clean Water Act, regulations, and federal guidance issued thereto.
- Minimize detrimental soil conditions with total acreage impacted (compaction, puddling, displacement, and severe burning) not to exceed 20 percent of the total acreage within the activity area including landings and system roads.
- Down trees that influence or will eventually influence stream channel dynamics should not be removed.
- Acceptable erosion control means only minor deviation from established standards, provided no major or lasting damage is caused to soil or water.
- Equipment shall not be operated when conditions are such that soil and/or water damage will result. Contract provisions must be met. Erosion control work done by the purchaser shall be adjusted by the ground and weather conditions and the need for controlling runoff. Erosion control work shall be kept current.
- Revegetation measures, including grass seeding must be supplemental to other stabilization measures such as mulching, pitting, scarifying, subsoiling, waterbars, and dips. Hold soil in place on constructed roads and prevent silt movement into streams.

References Cited in the Oregon Snake River – Hells Canyon Water Quality Management Plan

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6.2 State of Idaho General Implementation Plan

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**Idaho Department of
Environmental Quality**



**State of Idaho General Implementation Plan
(Water Quality Management Plan)**

for the

**Snake River – Hells Canyon
Total Maximum Daily Load (TMDL)**

July 2003

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Purpose

The Snake River - Hells Canyon (SR-HC) Total Maximum Daily Load (TMDL) is a joint effort between the Idaho Department of Environmental Quality (IDEQ) and the Oregon Department of Environmental Quality (ODEQ), with participation by the US Environmental Protection Agency (US EPA) and local stakeholders.

The purpose of this water quality management plan document is to act as a general outline for implementation of the SR-HC TMDL. According to IDEQ guidance (IDEQ, 1999a), an implementation plan “provides details of the actions needed to achieve load reductions (set forth in a TMDL), a schedule of those actions, and specifies monitoring needed to document actions and progress toward meeting state water quality standards.” This TMDL has been prepared as a bi-state process between Idaho and Oregon. To fulfil the requirements of the State of Oregon TMDL process, an implementation plan must be submitted to the US EPA with the SR-HC TMDL. IDEQ guidance states that a TMDL implementation plan should be developed within eighteen months of the approval of the TMDL it is intended to support and supplement. Because of this difference in procedure, this general plan is being submitted with the SR-HC TMDL and other, more specific implementation plans will be prepared and submitted according to the IDEQ procedure.

Overview/Background

The scope of this TMDL effort extends from where the river intersects the Oregon/Idaho border (Snake River mile (RM) 409) to immediately upstream of the inflow of the Salmon River (RM 188) (Hydrologic Unit Codes (HUCs) 17050115, 17050201 and 17060101, and a small corner of 17050103). This scope includes the Hells Canyon Complex reservoirs: Brownlee, Oxbow and Hells Canyon. For the purposes of this document, the SR-HC reach has been divided into five segments: Upstream Snake River (RM 409 to 335); Brownlee Reservoir (RM 335 to 285); Oxbow Reservoir (RM 285 to 272.5); Hells Canyon Reservoir (RM 272.5 to 247); and Downstream Snake River (RM 247 to 188).

The Snake River Basin includes areas of Idaho, Nevada, Oregon, Utah, Washington and Wyoming. The Snake River is the 10th longest river system in the United States, extending over 1000 miles from its headwaters in Yellowstone National Park, Wyoming, to its confluence with the Columbia River near Pasco, Washington. The Snake River is the major tributary in the Columbia River system. It drains about 87 percent of the State of Idaho (about 73,000 square miles) and approximately 17 percent of the State of Oregon (about 16,900 square miles). In addition, over 18 percent of the State of Washington (approximately 19,600 square miles) is also located in the Snake River Basin. The Snake River stretches across nearly 760 miles of southern and southwestern Idaho, with about 270 miles of this segment acting as the border between Oregon and Idaho. Near Lewiston the Snake River leaves Idaho (having left Oregon upstream near China Garden Creek), traveling the remainder of its length westward across Washington toward its confluence with the Columbia River.

Conditions within this system vary ecologically, geologically, and hydrologically between upstream and downstream segments. Ecological variations within the river system are evident in the changes in climate, vegetation, animal populations and fisheries throughout the listed

segments. Geologic variation such as changes in elevation, soil, rock type, landforms and relative impact of naturally occurring erosive processes are observed upstream to downstream. Equally evident are the hydrologic variations that occur with distance traveled from the fast-flowing upstream section of the river, through the slower-flowing, more lacustrine (lake-like) reservoir systems, to the rapid, white-water section downstream of Hells Canyon Dam. In addition to changes in flow and velocity, hydrologic variations include differences in relative ground and surface-water inflows and channel morphology throughout the listed segments. Variations in water quality and quantity also occur over time. Temporal variations cover a wide range of factors including historical vs. current land use and river management conditions, changes induced by differences in flow and precipitation in a wet year vs. a dry year, and seasonal variation in both water quality and quantity.

For more information on the characterization of the Snake River basin watershed, see section 2.1 of the Snake River - Hells Canyon Subbasin Assessment.

Designated Beneficial Uses

Designated surface water beneficial use classifications are intended to protect the various uses of each state's surface water. The specific designated beneficial uses for the SR-HC TMDL reach differ slightly between Oregon and Idaho, but the basic concepts are consistent. Numeric and narrative water quality standards are designed to protect the most sensitive of each state's beneficial uses. The designated beneficial uses for the SR-HC TMDL reach are listed in the table below. Segment-specific designated beneficial use information is available in Tables 2.2.3 a and 2.2.3 b of the SR-HC Subbasin Assessment.

Designated Beneficial Uses for the Snake River – Hells Canyon TMDL Reach

Oregon Beneficial Use	Idaho Beneficial Use	Bi-State Beneficial Use Category
Public Domestic Water Supply	Cold Water Biota	Aquatic Life
Private Domestic Water Supply	Primary Contact Recreation	Recreation
Industrial Water Supply	Domestic Water Supply	Water Supply
Irrigation	Special Resource Water	Wildlife habitat
Livestock Watering	Salmonid Spawning	Aesthetics
Fishing and Boating		
Resident Fish and Aquatic Life		
Anadromous Fish Passage		
Wildlife and Hunting		
Fishing		
Water Contact Recreation		
Salmonid Rearing and Spawning		
Hydropower		
Salmonid Fish Rearing		
Commercial Navigation and Transport		
Aesthetic Quality		

Listed Pollutants

The mainstem Snake River from where the river intersects the OR/ID border at river mile 409 downstream to immediately above the Salmon River at river mile 188 has been identified as water quality limited due to violations of water quality standards. The table below outlines listed

pollutants from the SR-HC TMDL reach. Segment-specific pollutant information is available in Tables 2.2.3 a and 2.2.3 b of the SR-HC Subbasin Assessment.

303(d) listed pollutants for the Snake River – Hells Canyon TMDL Reach

Oregon 303(d) Listed Pollutants	Idaho 303 (d) Listed Pollutants
Mercury	Bacteria
Temperature	Dissolved Oxygen
	Mercury
	Nutrients
	pH
	Sediment
	Temperature

Total dissolved gas is not listed on either State's 303(d) lists but was addressed due to direct requests from members of the public advisory team (PAT) during the SR-HC TMDL process. The following parameters have been identified as causing violations of Oregon and Idaho water quality standards in the section of the Snake River covered in this TMDL:

BACTERIA

Violations of bacteria in surface waters can result in health risks for primary contact recreation such as swimming, water skiing and skin diving where there is a risk of ingestion of small quantities of water. Elevated bacteria counts also represent a risk (to a lesser degree) for secondary contact recreation such as boating. The following is a listing of possible bacteria sources in the subbasin; it is not meant to be comprehensive, but it does contain the most probable sources of bacteria in the subbasin:

- Improperly treated sewage and septic waste
- Animal wastes

Available data show that bacteria counts (*E. coli* and fecal coliform) have not exceeded water quality criteria for primary or secondary contact recreation within the Upstream Snake River segment of the SR-HC reach during recent years. Based on these data, the SR-HC TMDL process recommends that the mainstem Snake River (RM 409 to RM 347, OR/ID border to Scott Creek inflow) be delisted for bacteria by the State of Idaho as part of the first 303(d) list submitted by the State of Idaho subsequent to the currently approved 1998 listing.

DISSOLVED OXYGEN

Dissolved oxygen (DO) is important for fish and other aquatic life. Low DO levels in the SR-HC TMDL reach are caused primarily by oxygen-demanding pollutants and by respiration effects of algae. The following is a listing of possible sources of low dissolved oxygen in the subbasin:

- High nutrient, algal or organic loading and degradation

NUTRIENTS

Nutrients help promote the growth of algae. Respiring algae consume oxygen. During the day, when sunlight drives photosynthesis, the effects of respiration are offset by the production of oxygen. At night, however, when the sun cannot drive photosynthesis, the algae consume oxygen from the water column. In addition, decomposition of algae and other detritus can

deplete oxygen from the water and sediment. Excess nutrients, primarily phosphorus in the SR-HC TMDL reach, cause nuisance aquatic growth that can adversely affect aquatic life and recreational uses. Although phosphorus is naturally occurring in the Snake River basin, there are also anthropogenic sources. The following is a listing of some phosphorus sources in the subbasin:

- Urban runoff
 - Roadways
 - Stormwater
- Rural runoff
 - Roadways
 - Rural stormwater
 - Ranchettes
- Agricultural runoff
 - Applied fertilizers in farming and landscaping
 - Livestock grazing
 - Irrigation practices
- Forestry runoff
 - Roadways
 - Grazing on forested lands
- Algae and detritus
- Instream and near-stream erosion
- Sewage and septic waste

MERCURY

The Snake River - Hells Canyon reach is under a human fish consumption advisory due to mercury levels. Historical agricultural chemicals, industrial and municipal source inputs, and air deposition from local and distant sources of mercury are generally considered to be minor sources of mercury within the section of the Snake River basin covered by this TMDL. Primary mercury sources include:

- Legacy mining
- Natural geologic inputs

The SR-HC mercury TMDL has been postponed until The SR-HC mercury TMDL has been postponed until 2006 pending collection of water column data that will allow determination of mercury loading. Data collection and improved modeling capability will be undertaken in the interim so that accurate loading assessments can be arrived at.

PH

pH is the measure of acidity or alkalinity in a system. Extreme levels of pH can be toxic to aquatic life. In the Snake River - Hells Canyon subbasin reach variations in pH are buffered by naturally occurring minerals. The photosynthetic process of algae can drive the pH up to levels that are toxic. Available data show that pH levels have not exceeded water quality criteria for primary or secondary contact recreation within the Upstream Snake River segment of the SR-HC reach during recent years. Based on these data, the SR-HC TMDL process recommends that the mainstem Snake River from RM 409 to RM 347 (OR/ID border to Scott Creek inflow) and from

RM 335 to RM 285 (Brownlee Reservoir) be delisted for pH by the State of Idaho as part of the first 303(d) list submitted by the State of Idaho subsequent to the currently approved 1998 listing.

SEDIMENT

Suspended sediment and bedload sediment can have a negative impact on aquatic life, including deposition and transport of adsorbed toxic materials, interfering with feeding behavior, gill damage, reduced growth rates, smothering eggs and fry, and death. The following is a listing of some sediment sources in the subbasin:

- Erosion from roadways
- Erosion from agricultural lands
- Urban and suburban stormwater run-off
- Landslides
- Forest fires
- High flow events

TEMPERATURE

Temperature is a key factor in determining water quality, particularly in regards to fish health and aquatic habitat. High temperatures can be harmful to fish at all stages of life, especially if they occur in combination with other habitat limitations. In the Snake River - Hells Canyon reach environmental factors such as a hot, dry climate and sparse, low growing native vegetation play a major role in determining water temperature. The following is a listing of some factors affecting temperature in the subbasin:

- Industrial inputs
- Sewage treatment plant discharges
- Agricultural inputs
- Riparian vegetation disturbance
- Natural temperature influences

TOTAL DISSOLVED GAS

Supersaturation of total dissolved gas can lead to gas bubble trauma disease in sub-yearling and yearling salmon. The primary cause of supersaturation of total dissolved gas in the water column is:

- Spillway releases from impoundments

Goals and Objectives

The overall goal of this general Water Quality Management Plan and the associated specific implementation plans is to achieve compliance with water quality standards for each of the 303(d) listed parameters and streams in the SR-HC TMDL reach. The specific goal of this general Water Quality Management Plan is to describe a basic strategy for the source specific implementation plans that will be prepared within 18 months of the approval of the SR-HC TMDL. When completed, the source-specific implementation plans will identify specific measures designed to reduce discharges from nonpoint sources to the level of the load allocations and discharges from point sources to the level of the waste load allocations described in the TMDL. As discussed above, this plan is preliminary in nature and is designed to be adaptive as more information and knowledge is

gained regarding the pollutants, allocations, management measures, and other related areas.

Current Regulatory Framework

Under Section 303(d)(1) of the Clean Water Act, states are required to prepare a list of waters not meeting state water quality standards. For waters on this list, the “303(d) list,” states must then prepare pollution control plans that allocate acceptable pollutant loads (or load reductions) to point and nonpoint sources contributing to the water quality violation. These plans are referred to as Total Maximum Daily Loads (TMDLs). The statute requires further, that TMDLs “be established at a level necessary to implement the applicable water quality standard” (33U.S.C. §1313(d)(1)(C)).

US EPA has determined that States should develop TMDL “implementation plans” to describe the tools, methods, and authorities that will be used to achieve water quality standards, schedules and milestones for implementing the called-for actions, and a specific plan to monitor progress toward water quality standards attainment and correct the TMDL if it is found to be ineffective. Implementation plans rely on existing local, state, and federal authorities (e.g., NPDES permitting authorities for point sources and requirements associated with financial assistance agreements under the Farm Bills enacted by Congress) and in no way create new enforcement authorities or result in more enforceable TMDLs.

In Idaho, implementation plans are not currently submitted to the US EPA for approval as part of the TMDL. In Idaho, implementation plans are approved by the IDEQ Regional and State Offices and submitted to EPA for their information and record keeping. In Idaho, implementation plans are also to be incorporated into the State’s Water Quality Management Plan.

Revisions to the Water Quality Planning and Management Regulations, including the TMDL regulations, at 40 CFR Parts 9 et al. (65 Fed. Reg. 43586-43670) were signed on July 11, 2000 and published in the Federal Register on July 13, 2000. The revised TMDL regulations assert that TMDLs must include implementation plans on submission as one of eleven required minimum elements. However, Supplemental Appropriations provisions attached to the fiscal year (FY) 2001 Military Construction, Family Housing, and Base Realignment and Closure for the Department of Defense (MilCon) Appropriations Bill, prohibited EPA from spending any FY 2000 or FY 2001 funds to implement, or prepare to implement, these regulatory provisions. Additionally, a change in federal administration has resulted in the revisions being reviewed by the new (incoming) administration and a decision on “activation” of the proposed rule changes being delayed yet again. Therefore, this document, and the associated 18 month schedule for completion of the specific implementation plans have been drafted under the existing TMDL rules outlined in Section 303(d) of the Clean Water Act and associated 1992 TMDL program regulations (40 CFR Part 130, Section 130.7).

Responsibility and Plan Development

It is expected that the compilation of specific implementation plans for the SR-HC TMDL will proceed under the existing practice established for the State of Idaho, namely, implementation

plans will be cooperatively developed by IDEQ, local Watershed Advisory Group(s) (WAGs), and other ‘designated agencies’ with input from the established public process. It is envisioned that the Public Advisory Team (PAT) which functions as the WAG for the SR-HC TMDL, will also have the opportunity to be involved in this process as a group or on a member-specific basis as they choose. Their experience with the SR-HC TMDL process will be invaluable to the identification of effective, productive measures to attain the targets identified in the TMDL.

WAGs may be created in separate drainages where they do not already exist to assist IDEQ in completion of these specific implementation plans. Where WAGs are already in place, they will also act as an integral part of the implementation planning process to identify appropriate implementation measures. Other individuals may also be identified to assist in the development of the site-specific implementation plans as their areas of expertise are identified as beneficial to the process. Together, these entities will recommend specific control actions and will then, with the Basin Advisory Group (BAG), review the specific implementation plan before submitting it to IDEQ. IDEQ will act as a repository for approved implementation plans.

Designated state agencies are responsible for assisting with preparation of specific implementation plans, particularly for those sources for which they have regulatory authority or programmatic responsibilities. Idaho’s designated state management agencies are:

- Idaho Department of Lands (IDL): timber harvest, oil and gas exploration and development, mining
- Idaho Soil Conservation Commission (ISCC): grazing and agriculture
- Idaho Department of Transportation (IDT): public roads
- Idaho Department of Agriculture (IDA): aquaculture
- Idaho Department of Environmental Quality (IDEQ): all other activities

To the maximum extent possible, specific implementation plans will be developed with the participation of federal partners and land management agencies (i.e. the Natural Resource Conservation Service, US Forest Service, US Bureau of Land Management, and US Bureau of Reclamation, etc.). In Idaho, these agencies, and their federal and state partners, are charged by the Clean Water Act to lend available technical assistance and other appropriate support to local efforts/projects for water quality improvements.

All stakeholders in the SR-HC reach have a responsibility for implementation of the TMDL. IDEQ and the “designated agencies” in Idaho have primary responsibility for overseeing implementation in cooperation with landowners and managers. Their general responsibilities are outlined below.

- **IDEQ** will oversee and track overall progress on the specific implementation plan and monitor the watershed response. IDEQ will also work with local governments on urban/suburban issues.
- **IDL** maintains and updates approved best management practices (BMPs) for forest practices and mining. IDL is responsible for ensuring use of appropriate best management practices BMPs on state and private lands.
- **ISCC**, working in cooperation with local Soil and Water Conservation Districts and the Natural Resource Conservation Service (NRCS), will provide technical assistance to agricultural landowners. These agencies help landowners design BMP systems

- appropriate for their property, and identify and seek appropriate cost-share funds. They also provide periodic project reviews to ensure BMPs are working effectively.
- **IDT** is responsible for ensuring appropriate BMPs are used for construction and maintenance of public roads.
- **IDA** is responsible for working with aquaculture to install appropriate pollutant control measures. Under a Memorandum of Understanding with EPA and IDEQ, IDA also inspects dairies to ensure compliance with NPDES requirements.

The expectations of all designated agencies, WAGs and other appropriate public process participants are to:

- Develop BMPs to achieve Load Allocations (LAs) and Waste Load Allocations WLAs);
- Give reasonable assurance that management measures will meet load allocations through both quantitative and qualitative analysis of management measures;
- Adhere to measurable milestones for progress;
- Develop a timeline for implementation, with reference to costs and funding; and
- Develop a monitoring plan to determine if BMPs are being implemented, individual BMPs are effective, load and wasteload allocations are being met and water quality standards are being met.

In addition to the designated agencies, the public, through the WAG and other equivalent processes, will be provided with opportunities to be involved in implementation plan development to the maximum extent practical. It is recognized that public participation will significantly affect public acceptance of the document and the proposed control actions. The public (land owners, local governing authorities, tax payers, industries, and land managers) are the ones who know the pollutant sources best and will be responsible for implementing the control actions identified in the plan. Experience has shown that the best and most effective implementation plans are those that are developed with substantial public cooperation and involvement.

Adaptive Management

The goal of the Clean Water Act and associated administrative rules for Oregon and Idaho is that water quality standards shall be met or that all feasible steps will be taken towards achieving the highest quality water attainable. This is a long-term goal in many watersheds, particularly where non-point sources are the main concern. To achieve this goal, implementation must commence as soon as possible.

TMDLs are numerical loadings that are set to limit pollutant levels such that in-stream water quality standards are met and designated beneficial uses are supported. ODEQ and IDEQ recognize that TMDLs are values calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical and biological processes. Models and some other analytical techniques are simplifications of these complex processes and, while they are useful in interpreting data and in predicting trends in water quality, they are unlikely to produce an exact prediction of how streams and other waterbodies will

respond to the application of various management measures. It is for this reason that the TMDL has been established with a margin of safety.

For the purposes of the SR-HC TMDL, a general Water Quality Management Plan (Implementation Plan) will be written and submitted to EPA as part of the TMDL document. Following this submission, in accordance with approved state schedules and protocols, specific implementation plans will be prepared for pollutant sources in both Oregon and Idaho. If specific implementation plans are available at the completion of the TMDL, they will be referenced in the general Water Quality Management Plan. Appropriate agencies and/or entities as designated by the states will assist in the development and oversight of the specific plans. These specific implementation plans will be designed to reduce pollutant loads to meet the TMDLs established for listed pollutants.

For point sources, it is the initial expectation that sources will meet their specific waste load allocations in five years or sooner if feasible. During this time frame, each source will prepare a facilities plan (the point source version of an implementation plan) that will investigate alternatives for meeting allocations. If the facilities plan documents that achieving waste load allocations within the 5-year time frame is not feasible, the source may request an extension. The request may be considered by the Director, but, in the case of Oregon, may also be referred to the Oregon Environmental Quality Commission.

For nonpoint sources, ODEQ and IDEQ also expect that implementation plans be implemented as soon as practicable. ODEQ and IDEQ recognize, however, that it may take some period of time, from several years to several decades, to fully implement the appropriate management practices. ODEQ and IDEQ also recognize that it may take additional time after implementation has been accomplished before the management practices identified in the general Water Quality Management Plan or specific implementation plans become fully effective in reducing and controlling pollution. In addition, ODEQ and IDEQ recognize that technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques. It is possible that after application of all reasonable best management practices, some TMDLs or their associated targets and surrogates cannot be achieved as originally established. Nevertheless, it is the expectation of both ODEQ and IDEQ that nonpoint sources make a good faith effort to achieving their respective load allocations in the shortest practicable time.

Both ODEQ and IDEQ recognize that expedited implementation of TMDLs will be socially and economically challenging. Further, there is a desire to minimize economic impacts as much as possible consistent with protecting water quality and beneficial uses.

ODEQ and IDEQ further recognize that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated targets and surrogates. Such events could be, but are not limited to floods, fire, insect infestations, and drought.

For some pollutants in the SR-HC TMDL, pollutant surrogates have been defined as alternative targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human

access or activity in the basin or its riparian areas. It is the expectation, however, that the general Water Quality Management Plan and the associated specific implementation plans will address how human activities will be managed to achieve the water quality targets and surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal or other regulatory constraints. To the extent possible, the specific implementation plans should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. For instance, at this time, the existing location of a road or highway may preclude attainment of system potential vegetation due to safety considerations. In the future, however, should the road be expanded or upgraded, consideration should be given to designs that support TMDL load allocations and pollutant surrogates such as system potential vegetation.

If a non-point source that is covered by the TMDLs complies with its finalized implementation plan or applicable forest practice rules, it will be considered in compliance with the TMDL.

ODEQ and IDEQ intend to regularly review progress of this general Water Quality Management Plan and the associated specific implementation plans to achieve TMDLs. If and when ODEQ and IDEQ determine the general Water Quality Management Plan and the associated specific implementation plans have been fully implemented, that all feasible management practices have reached maximum expected effectiveness, and a TMDL or its interim targets have not been achieved, the DEQs shall reopen the TMDL and adjust it or its interim targets and the associated water quality standard(s) as necessary.

The implementation of TMDLs and the associated plans is enforceable under the applicable provisions of the water quality standards for point and nonpoint sources by ODEQ, IDEQ, and other state agencies and local governments in both Oregon and Idaho. However, it is envisioned that sufficient initiative exists on the part of local stakeholders to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that the responsible agency will work with land managers to overcome impediments to progress through education, technical support or enforcement. Enforcement may be necessary in instances of insufficient action towards progress. This could occur first through direct intervention from state or local land management agencies, and secondarily through ODEQ or IDEQ. The latter may be based on departmental orders to implement management goals leading to water quality standards.

If a source is not given a load allocation, it does not necessarily mean that the source is prohibited from discharging any wastes. A source may be permitted to discharge by ODEQ or IDEQ if the holder can adequately demonstrate that the discharge will not have a significant impact on water quality over that achieved by a zero allocation. For instance, a permit applicant may be able to demonstrate that a proposed thermal discharge would not have a measurable detrimental impact on projected stream temperatures when site temperature is achieved. Alternatively, in the case where a TMDL is set based upon attainment of a specific pollutant concentration, a source may be permitted to discharge at that concentration and still be considered as meeting a zero allocation.

In employing an adaptive management approach to the TMDLs, the general Water Quality Management Plan, and the associated specific implementation plans, ODEQ and IDEQ have the following expectations and intentions:

- Subject to available resources, ODEQ and IDEQ intend to review the progress of the TMDLs, general Water Quality Management Plan and the associated specific implementation plans, on a five-year basis.
- In conducting this review, ODEQ and IDEQ will evaluate the progress towards achieving the TMDLs (and water quality standards) and the success of implementing the general Water Quality Management Plan and associated specific implementation plans.
- ODEQ and IDEQ expect that designated agencies in each state will also monitor and document their progress in implementing the provisions of the specific implementation plans for those pollutant sources for which they are responsible. This information will be provided to ODEQ and IDEQ respectively for use in reviewing the TMDL.
- ODEQ and IDEQ expect that designated agencies will identify benchmarks for the attainment of TMDL targets and surrogates as part of the specific implementation plans being developed. As implementation of the general Water Quality Management Plan and the associated specific implementation plans proceeds, these established benchmarks will be used to measure progress toward the goals outlined in the SR-HC TMDL.
- Where implementation of the specific implementation plans or effectiveness of management techniques are found to be inadequate, ODEQ and IDEQ expect designated agencies to revise the components of their implementation plan to address these deficiencies.
- If ODEQ and IDEQ, in consultation with the designated agencies, conclude that all feasible steps have been taken to meet the TMDL and its associated targets and surrogates, and that the TMDL, or the associated targets and surrogates are not practicable, the TMDL may be reopened and revised as appropriate. ODEQ and IDEQ would also consider reopening the TMDL should new information become available indicating that the TMDL or its associated targets and/or surrogates should be modified.

Proposed General Management Measures

The proposed general management measures designed to meet the wasteload allocations and load allocations of each TMDL are laid out in the Load Allocation section of the SR-HC TMDL. A summary of these general actions is outlined by listed pollutant in the tables below. The timelines for achieving these measures will be specified in the specific implementation plans prepared within 18 months of the approval of the SR-HC TMDL. Due to the spatially expansive, and hydrologically complex nature of the SR-HC watershed, these timelines are expected to extend for several decades.

General Actions Outlined for Bacteria in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
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Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Data support delisting	Data support delisting
Brownlee Reservoir	Not listed	Not listed
Oxbow Reservoir	Not listed	Not listed
Hells Canyon Reservoir	Not listed	Not listed
Downstream Snake River	Not listed	Not listed

General Actions Outlined for Mercury in the Snake River – Hells Canyon TMDL*

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Total SR-HC TMDL reach (RM 409 to 188)	Data collection to determine loading	<ul style="list-style-type: none"> - Data collection to determine loading - Sediment/erosion control measures from other SR-HC TMDLs - Identification and remediation of legacy mining

* The SR-HC mercury TMDL has been postponed until 2006 pending collection of water column data that will allow determination of mercury loading.

General Actions Outlined for Nutrients and Dissolved Oxygen in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	<ul style="list-style-type: none"> - Biological nutrient removal or equivalent reduction for mechanical plants - Lagoons will conduct feasibility study to determine effectiveness of alternative treatments in long term planning 	<ul style="list-style-type: none"> - Implementation of BMPs in a tributary or drainage specific fashion to meet ≤ 14 ug/L chlorophyll <i>a</i> and ≤ 0.07 mg/L at discharge or inflow to the Snake River
Brownlee Reservoir	No point sources carrying a nutrient load discharge directly to Brownlee Reservoir	<ul style="list-style-type: none"> - Implementation of BMPs in a tributary or drainage specific fashion to meet ≤ 14 ug/L chlorophyll <i>a</i> and ≤ 0.07 mg/L at discharge or inflow to Brownlee Reservoir - Dissolved oxygen augmentation by Idaho Power Company
Oxbow Reservoir	No point sources carrying a nutrient load discharge directly to Oxbow Reservoir	<ul style="list-style-type: none"> - Implementation of BMPs in a tributary or drainage specific fashion to meet ≤ 14 ug/L chlorophyll <i>a</i> and ≤ 0.07 mg/L at discharge or inflow to Oxbow Reservoir
Hells Canyon Reservoir	Not listed – will benefit from	Not listed – will benefit from

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
	upstream improvements	upstream improvements
Downstream Snake River	Not listed – will benefit from upstream improvements	Not listed – will benefit from upstream improvements

General Actions Outlined for Sediment in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Existing NPDES limits or ≤ 50 mg/L as a monthly average if limits are not identified in existing permit	≤ 50 mg/L monthly average, ≤ 80 mg/L for acute events lasting no more than 14 days applied at the point of discharge to the Snake River
Brownlee Reservoir	No point sources carrying a sediment load discharge directly to Brownlee Reservoir	≤ 50 mg/L monthly average, ≤ 80 mg/L for acute events lasting no more than 14 days applied at the point of discharge to the Snake River
Oxbow Reservoir	No point sources carrying a sediment load discharge directly to Oxbow Reservoir	≤ 50 mg/L monthly average, ≤ 80 mg/L for acute events lasting no more than 14 days applied at the point of discharge to the Snake River
Hells Canyon Reservoir	Not listed – will benefit from upstream improvements	Not listed – will benefit from upstream improvements
Downstream Snake River	Not listed – will benefit from upstream improvements	Not listed – will benefit from upstream improvements

General Actions Outlined for Pesticides in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Not listed, acts as source for listed segment Bulk load allocation	- Not listed, acts as source for listed segment - Bulk load allocation - Sediment/erosion control
Brownlee Reservoir	No point sources carrying a pesticide load discharge directly to Brownlee Reservoir	- Not listed, acts as source for listed segment - Bulk load allocation - Sediment/erosion control
Oxbow Reservoir	No point sources carrying a pesticide load discharge directly to Oxbow Reservoir	- Bulk load allocation - Sediment/erosion control
Hells Canyon Reservoir	not listed – will benefit from upstream improvements	not listed – will benefit from upstream improvements
Downstream Snake River	not listed – will benefit from upstream improvements	not listed – will benefit from upstream improvements

General Actions Outlined for pH in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Data support delisting	Data support delisting
Brownlee Reservoir	Data support delisting	Data support delisting
Oxbow Reservoir	Not listed	Not listed
Hells Canyon Reservoir	Not listed	Not listed
Downstream Snake River	Not listed	Not listed

General Actions Outlined for Temperature in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Existing load at design flows	<ul style="list-style-type: none"> - Natural and unquantifiable conditions exceed criteria, anthropogenic loading less than 0.14 °C - Temperature assessments on a tributary drainage basis
Brownlee Reservoir	Existing load at design flows	<ul style="list-style-type: none"> - Natural and unquantifiable conditions exceed criteria, anthropogenic loading less than 0.14 °C - Temperature assessments on a tributary drainage basis
Oxbow Reservoir	Existing load at design flows	<ul style="list-style-type: none"> - Natural and unquantifiable conditions exceed criteria, anthropogenic loading less than 0.14 °C - Temperature assessments on a tributary drainage basis
Hells Canyon Reservoir	Existing load at design flows	<ul style="list-style-type: none"> - Natural and unquantifiable conditions exceed criteria, anthropogenic loading less than 0.14 °C - Temperature assessments on a tributary drainage basis
Downstream Snake River (cold water aquatic life and salmonid rearing)	Existing load at design flows	<ul style="list-style-type: none"> - Natural and unquantifiable conditions exceed criteria, anthropogenic loading less than 0.14 °C - Temperature assessments on a tributary drainage basis
Downstream Snake River (Salmonid spawning, fall chinook, October 23 to March 30)	Existing load at design flows	<ul style="list-style-type: none"> - Temperature load allocation to Idaho Power Company to meet water temperature at RM 345 (thermal potential surrogate) or ≤ 13 °C maximum weekly maximum temperature at the outflow of Hells Canyon Dam during

Segment	Point Source Allocations/Appropriate Actions	Nonpoint Source Allocations/Appropriate Actions
		critical period

General Actions Outlined for Total Dissolved Gas in the Snake River – Hells Canyon TMDL

Segment	Point Source Allocations/Appropriate Actions*	Nonpoint Source Allocations/Appropriate Actions
Upstream Snake River	Not applicable	Not applicable
Brownlee Reservoir	Not applicable	Not applicable
Oxbow Reservoir	Not to exceed 110% saturation at flows less than 72,500 cfs, or other loading determined to be appropriate in the 401 Certification or FERC relicensing processes	Not applicable
Hells Canyon Reservoir	Not to exceed 110% saturation at flows less than 72,500 cfs, or other loading determined to be appropriate in the 401 Certification or FERC relicensing processes	Not applicable
Downstream Snake River	Not to exceed 110% saturation at flows less than 72,500 cfs, or other loading determined to be appropriate in the 401 Certification or FERC relicensing processes	Not applicable

* Actions are specific to the operation of Brownlee and Hells Canyon Dams

Point Sources

All individual point sources that were assigned a wasteload allocation in the TMDL will have the allocations incorporated in their NPDES permits as new effluent limits. Categories of sources that are regulated by general permits will also have such allocations.

WASTEWATER TREATMENT PLANTS

The wasteload allocations assigned to wastewater treatment plants (WWTP) will be implemented through modifications to their National Pollutant Discharge Elimination System (NPDES) permits. Permit modifications, however, will likely be preceded by the establishment of a compliance schedule between IDEQ/EPA and individual sources that will provide sources a schedule for meeting waste load allocations. Once facilities plans are completed and a source has selected an option for meeting its waste load allocations, the permits will be modified to incorporate effluent limits that are consistent with the waste load allocations and the selected option. The modified permits may also include provisions to implement management plans, if appropriate.

NPDES PERMITTED SOURCES

All general NPDES permits will be reviewed and, if necessary, modified to ensure compliance with load allocations. Either numeric effluent limits will be incorporated into the permits or specific management measures and plans will be developed.

Nonpoint Sources

All nonpoint sources that were assigned a load allocation in the TMDL will have the allocations incorporated into their specific implementation plans. The specific implementation plans will also describe by source, source category, or source subcategory the nonpoint source pollutant reduction measures, or BMPs, that are planned to achieve the TMDL load allocation. The implementation plan will describe the existing pollutant loads, the BMPs that will be applied to reduce loads, and the estimated pollutant reductions.

LAND-USE MANAGEMENT CATEGORIES

For nonpoint source discharges, ODEQ and IDEQ have assembled an initial listing of management categories. This listing, given below, is designed to be used by the designated agencies as guidance for selecting management measures to be included in the specific implementation plans. This listing is not comprehensive and other sources and management measures will most likely be added where appropriate. For each source or measures deemed applicable, a listing of the frequency and extent of application should also be provided. In addition, each of the designated agencies is responsible for source assessment and identification, which may result in additional categories. It is crucial that management measures be directly linked with their effectiveness at reducing pollutant loading contributions.

COUNTY AND CITY GOVERNMENT**Public Awareness/Education**

- General and Targeted Outreach

New Development and Construction

- Planning, permitting, and design procedures
- Education and outreach
- Construction and post construction control procedures
- Storm drain system construction

Existing Development

- Storm drain system operation and maintenance and retrofitting
- Street and road sweeping and maintenance
- Septic system inspection and enforcement
- Parking lot sweeping
- Commercial and industrial facilities controls
- Urban and commercial source controls (i.e. fertilizers and pet waste)

Riparian Area Management

- Revegetation
- Streambank stabilization

Community Facility Management

- Parks, public water bodies, public buildings and facilities

Best Management Practices

- Implementation and monitoring

Rules and Ordinances

- Creation of local rules and ordinances to meet load allocations and water quality standards

FOREST PRACTICES

- Riparian Area Management
- Road and Culvert Management
- BMP implementation and monitoring
- Public awareness and education

AGRICULTURAL PRACTICES

- Riparian area management
- Erosion control
- Animal waste control
- Nutrient management
- BMP implementation and monitoring
- Public awareness and education

TRANSPORTATION

- Road construction, maintenance, and repair
- BMP implementation and monitoring
- Public Awareness and education

Other Potential Mechanisms for Restoration of Water Quality

IDEQ and ODEQ recognize the desire of stakeholders to equalize the economic burden of meeting the TMDL.

One way to achieve this is to allocate loads based upon costs so that everyone pays the same per unit of reduction. Unfortunately, there is insufficient time and information to base allocations on equal cost. This could only be done after each allocated source completed a facilities plan to determine various means and the associated costs of reducing loads. This could take months if not longer and the current court appointed TMDL schedule will not support this delay.

Effluent Trading

A second approach to equalizing costs is effluent trading. Currently, a policy framework is available for effluent trading between point sources. A draft framework for joint point source – nonpoint source has been developed as part of the Lower Boise River Pollutant Trading Pilot Project. This framework may be modified to be appropriate to the SR-HC TMDL process. This could be accomplished within the first or second five-year phase of the implementation of the SR-HC TMDL. Until this framework is in place, IDEQ and ODEQ recommend that point sources with allocations expand their facilities planning efforts to consider means and costs of reducing their loads further than necessary to meet allocations. Sources could then market their additional load reductions to others under the existing point source to point source trading framework and, if their load reductions were cheaper to achieve, sell them. IDEQ and ODEQ are willing to adjust allocations after the TMDL is established provided the parties involved have enforceable contracts, permits, or other instruments to ensure that effluent trades can and will be implemented.

IDEQ and ODEQ will further support the construction (or modification) of a trading framework to allow nonpoint sources to participate in pollutant trading within the SR-HC TMDL watershed.

General Timeline and Steps for Implementation Plan Development

The purpose of this element of the general Water Quality Management Plan is to demonstrate a strategy for implementing and maintaining the plan and the resulting water quality improvements over the long term. Included in this section are timelines for the implementation of ODEQ and IDEQ activities. Each specific implementation plan will also include timelines. Timelines should be as specific as possible and should include a schedule for BMP installation and/or evaluation, monitoring schedules, reporting dates and milestones for evaluating progress.

The specific implementation plans will be designed to reduce pollutant loads from sources to meet TMDLs, their associated loads, and water quality standards. IDEQ recognizes that where implementation involves significant habitat restoration or reforestation, water quality standards may not be met for decades. In addition, IDEQ recognizes that technology for controlling nonpoint source pollution is, in some cases, in the development stages and will likely take one or more iterations to develop effective techniques.

For some SR-HC TMDLs, pollutant surrogates have been defined as alternative targets for meeting the TMDL for some parameters. The purpose of the surrogates is not to bar or eliminate human access or activity in the subbasin or its riparian areas. It is the expectation, however, that the specific implementation plans will address how human activities will be managed to achieve the surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal or other regulatory constraints. To the extent possible, the specific implementation plans should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. For instance, at this time, the existing location of a road or highway may preclude attainment of system potential vegetation due to safety considerations. In the future, however, should the road be expanded or upgraded, consideration should be given to designs that support TMDL load allocations and pollutant surrogates such as system potential vegetation.

IDEQ intends to regularly review progress of the specific implementation plans. The specific implementation plans, this overall general Water Quality Management Plan, and the TMDLs are part of an adaptive management process. Modifications to the general Water Quality Management Plan and the specific implementation plans are expected to occur on an annual or more frequent basis. Review of the TMDLs are expected to occur approximately five years after the final approval of the TMDLs, or whenever deemed necessary by ODEQ or IDEQ.

A preliminary timeline is outlined on the following page for activities related to the general Water Quality Management Plan and associated specific implementation plans.

Reasonable Assurance

Reasonable assurance has recently been described as a “high degree of confidence that wasteload allocations and/or load allocations in TMDLs will be implemented by Federal, State, or local authorities and/or voluntary actions.” (Preamble to proposed TMDL regulation, FR64 No.162, August 23, 1999). According to IDEQ guidance (IDEQ, 1999a), “reasonable assurance applies only to situations in which load reductions necessary to meet the load capacity for a particular

pollutant are split among both and nonpoint sources.” The SR-HC TMDL meets this qualification as nonpoint sources represent the dominant source of pollutants to the SR-HC TMDL reach.

Preliminary timeline for activities specific to the first phase of implementation for the Snake River - Hells Canyon TMDL (Dates in Table assume that the SR-HC TMDL will be approved in 2002. If approval is later, the initiation of implementation will reflect this delay.)

Activity	2003		2004		2005		2006		2007	
ODEQ/IDEQ Establishment of Mutual Agreements and Orders to Require Facilities to prepare Facilities Plans for meeting WLAs and NPDES Permits										
ODEQ/IDEQ Issuance of MS4 Permits (if appropriate)										
ODEQ/IDEQ Modification of General Permits to meet WLAs										
Development and Submittal of Source Specific Implementation and Monitoring Plans										
NPDES Permit Holders Develop Facilities Plans										
Implementation of Source Specific Plans										
ODEQ/IDEQ Modification of WWTP Permits to meet WLAs										
NPDES Permit Holders Implement Facilities Plans for Meeting WLAs										
ODEQ/IDEQ/Agency/Public Review of TMDL and general Water Quality Management Plan										
Submittal of Annual Reports	Sept. 30 of Each Year									

Please note: Only the first phase of implementation is outlined in this table. December 2007 marks the end of the first five-year “phase” of implementation (assuming TMDL approval occurs in 2002). Consecutive five-year phases will follow with assessment of system wide progress at the end of each phase (i.e. 2012, 2017, 2022, etc.) If TMDL approval occurs later than 2002, five-year phases will be reflective of time frames starting the year following approval.

For point sources, reasonable assurance is achieved through the establishment of NPDES permits (including general permits) that are consistent with established wasteload allocations contained in the TMDL. Other permits and licenses, such as FERC relicensing, stormwater permits, or Endangered Species Act Section 10 incidental take permits, may also provide adequate reasonable assurance.

For nonpoint sources that rely, generally, on voluntary or incentive-based mechanisms to achieve loading reductions, IDEQ guidance (IDEQ, 1999a) states that the agency provides reasonable assurance for nonpoint sources through its Nonpoint Source Management Plan (which has been approved by EPA and certified by the Attorney General to have adequate authorities to be implemented in Idaho). This guidance points out, that if necessary, “injunctive or other judicial

relief may be sought against the operator of a nonpoint source activity in accordance with the IDEQ Director's authorities provided by Idaho Code 39-108."

Monitoring and the 'Feedback Loop'

Monitoring will be conducted to ensure that nonpoint source reduction mechanisms are operating effectively, and to give some quantitative indication of the reduction efficiency for in-place BMPs. The monitoring proposed for this plan includes both implementation monitoring and water quality monitoring. Implementation monitoring consists of a variety of methods such as spot checks, periodic project reviews and photographic documentation to demonstrate that pollutant reduction measures have been properly installed, are being properly maintained and are performing as designed. Implementation monitoring methods have been summarized in the sections describing implementation measures and are described in more detail in the appropriate appendices.

Generally, water quality monitoring will not be carried out on a project-specific basis but rather as a suite of indicator analyses monitored at critical points within the system. For example, a decrease in total phosphorus over time as monitored at Farewell Bend (RM 335) indicates that BMPs emplaced within the Upstream Snake River segment watershed were effective in reducing total phosphorus levels within the mainstem water column. This data will be used, in conjunction with flow measurements, to evaluate the overall increase in water quality indicators through the decrease in total pollutant mass being contributed to the system.

If in-stream monitoring indicates a decreasing water quality trend (not directly attributable to environmental conditions) or a violation of standards despite use of approved BMPs or knowledgeable and reasonable efforts, then BMPs for nonpoint source activities must be modified by the appropriate agency to ensure protection of beneficial uses (IDAPA Section 16.01.02.350.02.b.ii). This process is known as the "feedback loop" in which BMPs or other efforts are periodically monitored and modified if necessary to ensure protection of beneficial uses. With continued instream monitoring, SR-HC TMDL implementation will initiate the feedback loop process and will evaluate the success of BMP implementation and its effectiveness in controlling nonpoint source pollution.

State Programs and Authorities

Under Section 319 of the Clean Water Act (CWA), each state is required to develop and submit a nonpoint source management plan. Idaho's Nonpoint Source Management Program (IDEQ, 1999a) was submitted and approved by the EPA. The nonpoint source management program describes many of the voluntary and regulatory approaches the state will take to abate nonpoint pollution sources. Since the development of the original Nonpoint Source Management Program in 1989, revisions of the water quality standards have occurred. Many of these revisions have adopted provisions for public involvement, such as the formation of Basin Advisory Group (BAGs) and Watershed Advisory Groups (WAGs) (IDAPA 16.01.02052). The WAGs are established in high priority watersheds to assist IDEQ and other state agencies in developing TMDLs, Watershed Management Plans and specific implementation plans for those segments.

The State of Idaho water quality standards refer to other programs whose mission is to control nonpoint pollution sources. Some of these programs and responsible agencies are listed in the following table.

The State of Idaho uses a voluntary approach to control agricultural nonpoint sources. However, regulatory authority can be found in the state water quality standards (IDAPA 16.01.02350.01 through 16.01.02350.03). IDAPA 16.01.02054.07 refers to the Idaho Agricultural Pollution Abatement Plan (IAPAP) that provides direction to the agricultural community for approved BMPs. The IAPAP outlines responsible agencies or elected groups (local Soil and Water Conservation Districts) that will take the lead if nonpoint pollution problems need addressing. For agricultural activity it assigns the local soil conservation districts to assist the landowner/operator to develop and implement BMPs to abate nonpoint pollution associated with the land use. If a voluntary approach does not succeed in abating the pollutant problem, the state may provide injunctive relief for those situations determined to be an imminent and substantial danger to public health or environment (IDAPA 16.01.02350.02 (a)).

State of Idaho Regulatory Authority for Nonpoint Pollution Sources

Citation	IDAPA Citation	Responsible Agency
Rules governing forest practices	16.01.02350.03(a)	Idaho Department of Lands
Rules governing solid waste management	16.01.02350.03(b)	Idaho Department of Health and Welfare
Rules governing subsurface and individual sewage disposal systems	16.01.02350.03(c)	Idaho Department of Health and Welfare
Rules and standards for stream channel alteration	16.01.02350.03(d)	Idaho Department of Water Resources
Rules governing exploration and surface mining operations	16.01.02350.03(e)	Idaho Department of Lands
Rules governing placer and dredge mining	16.01.02350.03(f)	Idaho Department of Lands
Rules governing dairy waste	16.01.02350.03(g) or IDAPA 02.04.14	Idaho Department of Agriculture

If a nonpoint pollutant(s) is determined to be impacting beneficial uses and the activity already has in-place referenced BMPs, or knowledgeable and reasonable practices, the state may request the BMPs be evaluated and/or modified to determine appropriate actions. If evaluations and/or modifications do not occur, injunctive relief may be requested (IDAPA 16.01.02350.2, ii (1)).

A voluntary approach is expected to be able to achieve the nonpoint source reduction goals. Strong public involvement coupled with the eagerness of the agricultural community demonstrates a willingness to implement BMPs and protect water quality. In the past, cost-share projects have provided the agricultural community technical assistance, information and education (I & E), and the cost share incentives to implement BMPs. The continued funding of these projects will be critical for the load allocations to be achieved in the Snake River watershed.

Reasonable Assurance for Forestry BMP Implementation

The major forest landowners and land managers in the watershed have been working together throughout development of the SR-HC TMDL and this implementation plan. All the major forestland managers have generally committed to achieving TMDL related goals on forested lands. In addition to this commitment, various federal and state requirements and regulations will ensure that the forest landowners continue to maintain and improve road systems and riparian management. Forestry is one of the few regulated land uses in the watershed. All owners will continue to abide by the rules and regulations of the State under the Forest Practices Act that require monitoring of BMP effectiveness and update of BMPs when they are found to be inadequate.

Additionally, the Forest Service will continue to follow land and resource management plans to implement activities. Activities include: timber harvest, road management, livestock grazing, prescribed fire, watershed improvements, fish habitat improvements, recreation management, and others. Sources of pollutants of concern will be identified and treatments implemented concurrent with activities. Activity plans are finalized and implemented as funds become available. National Environmental Protection Act and Endangered Species Act analyses will be required prior to implementation. Projects are scheduled based on funding and priorities on each forest. Partnership and cooperative efforts will be developed on a project-by-project basis.

For federal lands, funding for projects will rely in part upon fees taken in on timber sales and/or special federal allocations to address water quality problems. Funding sources include: collection agreements, soil and water improvements, road maintenance, ecosystem management, Capital Investment Project (CIP), 5 percent funds, and Knutsen-Vanderburg (K-V) funds, and other grants (CWA Section 319, National Forest Foundation, etc). Future direction from the Natural Resource Agenda, and Clean Water Action Plan may also provide future sources of funding.

Idaho Department of Lands relies largely on funds received from timber sales.

Reasonable Assurance for Agricultural BMP Implementation

BMP implementation for agriculture in the State of Idaho is achieved through voluntary incentive-based programs. Historically, cost-share incentives have been available to producers from state and federal conservation programs. The state incentive program was the SAWQP program. This program was established to assist agricultural producers in watersheds where critical acres are identified as contributing to a defined problem associated with a decline in water quality. The SAWQP program has been historically funded through the Idaho Pollution Control Account. That fund was projected to deplete financial resources in 1999. All funds from this account have been allocated and the ability to write new contracts has been frozen. A SAWQP replacement program administered by the Idaho Soil Conservation Commission is expected to be in place in the near future, and will act as a funding source to projects similar to those funded by the original SAWQP program.

A new statewide cost-share program known as the Water Quality Program for Agriculture (WQPA) was approved and funded by the Idaho Legislature for the state fiscal year 2000. Funds for this program became available in July of 2000 and BMPs were installed starting in 2001. Federal programs have been available to landowners or producers for the implementation of BMPs or practices that will have a positive impact on the land and water quality. These programs historically include the Conservation Reserve Program (CRP), as well as Habitat Improvement Program (HIP), Wildlife Habitat Incentive Program (WHIP), Wetland Reserve Program (WRP), and the most recent program, Environmental Quality Incentives Program (EQIP). Federal programs are developed outside of the State of Idaho. Availability of funds, longevity, and rules of the programs are not subject to local management. Federal cost-share programs are expected to continue to be available in the future to assist meeting the reductions required by the SR-HC TMDL.

Reasonable Assurance for Urban/Suburban BMP Implementation

Successful implementation of recommended BMPs and management practices to reduce pollutant loading within the urban/suburban arena will require the availability of cost share funding, loans, grants, or other sources of funding. Full-scale implementation cannot be expected to occur prior to the identification of such funding sources, and is expected to proceed on an intermittent basis, as funding becomes available. The adoption of a countywide erosion and sediment control ordinance and implementation of specific programs recommended for the municipalities depends on action by the County Commission and elected city officials.

There are many voluntary, non-regulatory, watershed improvement programs that are in place and are addressing water quality concerns in the Snake River-Hells Canyon Subbasin. Both technical expertise and partial funding are provided through these programs. Examples of activities promoted and accomplished through these programs include: planting of conifers, hardwoods, shrubs, grasses and forbs along streams; relocating legacy roads that may be detrimental to water quality; replacing problem culverts with adequately sized structures, and improvement/ maintenance of legacy roads known to cause water quality problems. These activities have been and are being implemented to improve watersheds and enhance water quality. Many of these efforts are helping resolve water quality related legacy issues.

Landowner Assistance Programs

A variety of grants and incentive programs are available to landowners in the SR-HC TMDL watershed. These incentive programs are aimed at improving the health of the watershed, particularly on private lands. They include technical and financial assistance, provided through a mix of state and federal funding. Local natural resource agencies administer this assistance, including the Idaho Department of Lands, Idaho Department of Fish and Game, IDEQ, Idaho Soil Conservation Commission and the National Resources Conservation Service.

Field staff from the administrative agencies provide technical assistance and advice to individual landowners, watershed councils, local governments, and organizations interested in enhancing the subbasin. These services include on-site evaluations, technical project design, stewardship/conservation plans, and referrals for funding as appropriate. This assistance and funding is further assurance of implementation of the general Water Quality Management Plan and associated specific implementation plans.

Financial assistance is provided through a mix of cost-share, tax credit, and grant funded incentive programs designed to improve on-the-ground watershed conditions. Some of these programs, due to source of funds, have specific qualifying factors and priorities. Cost share programs include the Forestry Incentive Program (FIP), Stewardship Incentive Program (SIP), Environmental Quality Incentives Program (EQIP), and the Wildlife Habitat Incentive Program (WHIP).

Monitoring and Evaluation

The objectives of this monitoring effort are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and track effectiveness of TMDL implementation. This monitoring and feedback mechanism is a major component of the “reasonable assurance of implementation” for the SR-HC TMDL general Water Quality Management Plan and the associated source specific implementation plans.

The specific implementation plans will be tracked by accounting for the numbers, types, and locations of projects, BMPs, educational activities, or other actions taken to improve or protect water quality. The mechanism for tracking specific implementation efforts will be annual reports to be submitted to ODEQ and IDEQ.

The “monitoring and evaluation” component has two basic categories:

- Tracking the implementation progress of specific implementation plans; and
- Tracking the progress of improving water quality through monitoring of physical, chemical and biological parameters.

Monitoring plans will provide information on progress being made toward achieving TMDL allocations and achieving water quality standards, and will help in the interim evaluation of progress as described under Adaptive Management.

Implementation Plan Monitoring

Implementation plan monitoring also has two major components:

- Watershed monitoring, and
- BMP monitoring.

IDEQ has primary responsibility for the former, while designated agencies have primary responsibility for the latter. Watershed monitoring measures the success of the implementation measures in accomplishing the overall TMDL goals and includes both in-stream and in-reservoir monitoring. BMP monitoring measures the success of individual pollutant reduction projects. Implementation plan monitoring may also supplement the watershed information available during development of the TMDL and fill data gaps.

WATERSHED MONITORING

Watershed monitoring of the SR-HC TMDL reach has the following objectives:

- Evaluate of watershed pollutant sources, refine of baseline conditions and pollutant loading;
- Evaluate trends in water quality data;
- Establish pollutant storage and recycling capacity in the SR-HC TMDL reach;

- Evaluate the collective effectiveness of implementation actions in reducing pollutant loading to the mainstem and/or tributaries; and
- Gather information and fill data gaps in order to more accurately determine pollutant loading to the SR-HC TMDL reach.

BMP/PROJECT EFFECTIVENESS MONITORING

Site or BMP-specific monitoring may be included as part of specific treatment projects if determined appropriate and justified, and will be the responsibility of the designated project manager or grant recipient. The objective of an individual project monitoring plan is to verify that BMPs are properly installed, being maintained and working as designed. Monitoring for pollutant reductions at individual projects will consist of spot checks, annual reviews and evaluation of advancement toward reduction goals. Evaluation of advancement toward reduction goals will be accomplished using the project tracking system (described in more detail on page 30) and annual reports.

Individual entities and source groups constructing BMP projects should include budget allowances for a monitoring program (qualitative and/or quantitative) for the project site. The information generated by each of the agencies/entities gathering data in the SR-HC TMDL reach will be pooled and used to determine whether management actions are having the desired effects or if changes in management actions and/or TMDLs are needed. Results will be used to recommend or discourage similar projects in the future and to identify specific watershed or reach, monitoring information that indicates the implementation plan is not achieving expected results. This detailed evaluation will typically occur on a 5-year cycle. If progress is not occurring then the appropriate management agency will be contacted with a request for action.

EVALUATION OF EFFORT OVER TIME

Annual reports on progress toward TMDL implementation will be prepared to provide the basis for assessment and evaluation of progress. Documentation of TMDL implementation activities, actual pollutant reduction effectiveness, and projected load reductions for planned actions will be included. If water quality goals are being met, or if trend analysis shows that implementation activities are resulting in benefits that indicate that water quality objectives will be met in a reasonable period of time, then implementation of the plan will continue. If monitoring or analyses show that water quality goals are not being met, the TMDL implementation plan will be revised to include modified objectives and a new strategy for implementation activities.

Public Involvement

In Idaho, implementation plans are subject to public involvement requirements similar to those for TMDLs. Idaho Code Section 39-3611 states that TMDLs shall be developed in accordance with Section 39-3614 (duties of the BAG), Section 39-3616 (duties of each WAG) and the federal Clean Water Act. Idaho Code Section 39-3612 states that after a TMDL is completed the Director shall, subject to the provisions of Idaho Code Section 67-5200, adopt the processes as part of the state's water quality management plan pursuant to the federal Clean Water Act. Federal regulations also require public participation in Clean Water Act decisions (40 CFR Part 25).

Idaho Code identifies WAGs as the entity responsible for recommending actions needed to effectively control sources of pollution. While a general framework for pollution control actions has been considered during development of the loading analysis, and this water quality management plan, the source specific implementation plans that will be prepared after the SR-HC TMDL is approved are the principal documents that specify the recommended actions needed to control pollutants. In developing these specific implementation plans, the WAGs and the Director will employ appropriate means of public involvement deemed necessary or required under Idaho Code Section 67-5200 and shall cooperate fully with the public involvement or planning processes of other appropriate public agencies. The BAG is also expected to review the specific SR-HC TMDL implementation plans. In meeting these various requirements, IDEQ will seek public involvement as follows:

1. At the minimum, drafts of the specific implementation plan will be presented to the WAG, if applicable, representing the geographic area covered. All WAG and BAG meetings will be open to the public.
2. IDEQ will publish notice in newspapers covering the TMDL geographic area advertising at least a thirty (30) day period for interested persons to review the draft specific implementation plans and present comments to IDEQ. The notice will be published with enough lead-time to reasonably advise the public of the meeting. The notice will indicate where the public may obtain a copy of the draft specific implementation plans prior to any public meetings; information about public meetings, if any are planned; when comments are due; a contact person for questions; and an address for submitting written comments.

IDEQ generally holds a public information meeting early in the comment period. At the meeting, IDEQ will present information on how the specific implementation plans were developed and answer questions from the public. Comments will be accepted in writing if postmarked by the last day of the public comment period.

If a WAG is involved in the development of the specific implementation plans, the thirty (30) day public comment period is still required but a public meeting is not. However, even in this situation a public meeting is strongly recommended. All public comments will be considered in preparing the final specific implementation plan.

Public Information and Education

Public information and education efforts are an important part of ensuring full and timely implementation of the measures proposed in this plan. Information and education will generally take two forms: general information about the plan directed to all residents and interests in the watershed and source-specific information and education efforts targeted to sources who may be involved in implementing pollutant reduction measures. General information and education measures will include a public meeting sponsored by the WAG or appropriate designated agency to explain the draft plan, an opportunity for public review and comment, and distribution of the final plan to interested parties. Ongoing information about implementation progress will be provided at WAG or appropriate designated agency meetings, which are open to the public.

Forestry Information and Education Efforts

Load reduction information, BMP locations, and performance/efficacy values obtained during the course of implementation will be available to the public through a variety of public forums including reports to the WAG or appropriate designated agency, Implementation Plan Source Groups and other organizations and agencies.

Agriculture Information and Education Efforts

Local Soil and Water Conservation Districts (SCDs) have been involved in various efforts to increase the knowledge and awareness of conservation practices for agricultural landowners. This has been advanced with methods such as with newsletters, workshops, articles and conservation planning.

In many SCDs, newsletters are mailed out to producers, landowners and interested residents of the district. Often these newsletters are produced by the SCD and provide general information about conservation practices as well as current events. Workshops are often held annually cover agriculture and other natural resource topics of special interest in the SCDs. These workshops have been well attended by the general public. The SCDs also often provide local media with articles about issues of interest to local agricultural landowners. Education also occurs on a personal level when district planners visit landowners and producers to develop conservation plans.

Urban/Suburban Information and Education Efforts

Load reduction information, BMP emplacement mechanisms and performance/efficacy values obtained during the course of implementation will be available to the public through a variety of public forums including reports to the WAG or appropriate designated agency, Implementation Plan Source Groups and other organizations and agencies.

Costs and Funding

Specific implementation plans will include a cost analysis for the resources needed to develop, execute and maintain the programs described. The purpose of conducting an economic analysis of project costs is to compare options and their effectiveness. Life cycle cost analysis allows projects of varying capital and operations costs to be compared. When combined with pollutant removal efficiencies, project costs can be compared in terms of their economic benefit per unit of pollutant removed (\$/kg or \$/kg/year).

Projects may be prioritized for implementation according to their unit costs of pollutant removal to maximize cost effectiveness. Another purpose of including a cost analysis is to describe estimated costs and demonstrate there is sufficient funding available to begin implementation. A final purpose may be to identify potential future funding sources for project implementation.

There are many natural resource enhancement efforts and projects occurring in the subbasin that are relevant to the goals of the plan. Funding is essential to implementing projects associated with this general Water Quality Management Plan. There are many sources of local, state, and federal funds. Several are discussed in the Reasonable Assurance section above.

Evaluation of Progress/Reporting

Annual reports from each source work group, detailing pollutant reduction measures implemented, observed emplacement and operation efficiencies, and projected load reductions will be submitted to the DEQs.

Project Tracking System

A tracking system will be prepared to serve as a master summary of all projects and BMPs constructed for the purpose of reducing the pollutant load to the SR-HC TMDL reach. The system will be used as a management tool to assess pollutant load reduction, to analyze cost effectiveness, and to assess performance of each BMP either individually or as a whole. The tracking system should include the following project characteristics:

- Project or BMP Identification and Description;
- Project Schedule;
- Project Inspection Responsibilities,
- Location of BMP or Project (watershed, source group);
- Project Priority;
- Estimated and Actual Pollutant Control Effectiveness;
- Estimated Costs (capital, annual operation and maintenance, unit costs for pollutant removal);
- Sources of Funding; and
- Collateral Watershed Benefits (in-stream flows, temperature, fisheries, aesthetics, flood control, etc.).

The tracking system will provide a database summary of all projects and BMPs in the SR-HC TMDL reach. Individual projects, tributary watersheds, and the SR-HC TMDL reach will be assessed for pollutant load reductions and cost effectiveness from the information available in the database. The tracking system will be used to support the preparation of annual reports and to document projects completed. Since the database also tracks projects yet to be completed, it will provide an aid to developing a funding strategy and project construction schedule. Finally, the database will be linked to a geographic information system (GIS) mapping system to locate each project within the SR-HC TMDL reach.

Management actions in response to implementation plan tracking may include revisions to the plan, revised project schedules, modified priorities for projects, identification of funding needs, and feedback to improve the pollutant reduction effectiveness of BMPs and projects. Field inspection and confirmation of the application of appropriate BMPs is an important element of overall program management. Field inspection may provide useful feedback to improve the implementation and effectiveness of future projects. Field inspections may also be a required component of other programs that support watershed management plans, such as state agricultural cost share grants.

Due to the complexity of the SR-HC TMDL, which will involve many projects and multi-year implementation, pursuit of project funding may be a significant challenge. Implementation plan tracking tools will provide financial planning information to support the systematic pursuit of

funding support from diverse sources including local funds, grants, and cost-share programs. Watershed benefits beyond the basic pollutant reduction objectives of individual projects and BMPs will be important to define. These collateral benefits may include enhancements to habitat, fisheries, flood control, sustained in-stream flows, and so on. These features may provide important information for prioritization of projects, with higher priority given to projects with multiple benefits. Collateral benefits may also be important in pursuit of implementation funding and may help projects qualify for outside funding support.

Annual Reports

Annual reports detailing pollutant reduction measures implemented, observed emplacement and operation efficiencies, and projected load reductions will be submitted to the DEQs. The tracking system will be used to support the preparation of annual reports and to document projects completed. These reports are tentatively scheduled to be submitted on or before 30 September of each year.

Implementation Plan Revision

The SR-HC TMDL will utilize monitoring data to evaluate progress in attaining water quality standards in the SR-HC TMDL reach and full support of designated beneficial uses. If goals are being reached, or if trend analysis shows that implementation activities are resulting in benefits that indicate that water quality objectives will be met within a reasonable time, the implementation plan will not be revised. If analysis, or other information indicates that water quality goals will not be met, the specific implementation plans will be revised to include new objectives and a new strategy for implementation actions.

The following conditions could indicate a need to revise the specific implementation plans:

- Monitoring data indicate water quality standards will not be attained by continued execution of the specific implementation plans.
- Actual effectiveness and efficiency of pollutant reduction BMPs/projects falls short of or exceeds projections used in the specific implementation plans.
- Pollutant reduction BMPs/projects are not executed according to the specific implementation plans due to lack of funding or other factors.
- Monitoring data indicate that natural background loadings of pollutants differ from historical data and revisions to reduction targets for manageable loadings are required.

Implementation Plan Revision vs. TMDL Revision

Careful consideration of the need for revisions is required to distinguish between the need to modify the implementation plan or the TMDL itself. Revisions to the specific implementation plan may be undertaken as a management approach to more effectively target activities to accomplish the water quality goals set in the TMDL. Revisions to the TMDL itself imply the need to revisit the basis for water quality impairment, the basic relationships associated with the maximum available loading capacity, and the load allocation to point and nonpoint sources. TMDL revision may have broader implications in terms of both stakeholder commitments and regulatory requirements.

A sustained effort in reduction of external pollutant loadings will be needed to improve water quality in SR-HC TMDL reach. Natural weather conditions may affect the rate of progress in meeting the SR-HC TMDL objectives for water quality improvement. Increased snowpack and precipitation is expected to benefit short-term water quality condition. Extended low water years are expected to delay beneficial improvements in water quality.

Land Use Changes

The SR-HC TMDL and this general implementation plan in some cases address loading issues and implementation strategies on a land-use basis. However, land-use distributions are not static. Data collected within the State of Idaho show diminishing agricultural and forestry land use and increasing urban/suburban land-use trends (Idaho Department of Commerce, 2000).

Land Use Change Scenarios

It is acknowledged that changes in land use will continue to occur throughout the implementation process and into the future. The following discussion is therefore intended to address this potential and ensure that land-use changes will not result in non-attainment of the required load reductions. This discussion is not intended as a mechanism to address current loading. Three generalized scenarios have been considered in evaluating the potential impact of land use changes on implementation of the SR-HC TMDL. These scenarios have been outlined as follows:

- Move High Load to Low Load Situation
 - Example: Convert developable land to a conservation easement
- Move Low Load to High Load Situation
 - Example: Convert developable land to residential
- Transition/Construction Impacts
 - Example: Construction erosion and sedimentation

If pre-development and post-development pollutant loadings can be quantified, three approaches may be considered with regard to the management of new development impacts. These approaches are outlined as follows:

- Apply BMPs to achieve reduction goal;
- Apply BMPs to maintain pre-development loads (no net increase); and
- Compensate for increased load with other reductions.

New Development

New development represents a unique aspect of loading and reduction considerations within the watershed as it commonly represents a change in land-use from within the existing nonpoint source categories. The dominant trend in land-use change within the State of Idaho is the conversion of agriculture and forested land to urban/suburban development. Features such as view, topography, recreation potential, and access by public roads drives development decisions. Income from property sales often supplements or replaces more limited income derived from agricultural land use.

It is recognized that in order to effectively meet pollutant reductions throughout the watershed, all contributing sources must participate in the reduction effort. Limiting reductions to existing

land uses alone will place an unfair burden for pollutant reduction on established practices. This burden will increase over time with occurrence of land use changes within the watershed.

Primary responsibility for review and approval of new development rests with local authorities. Zoning within the watershed is administered by County Planning and Zoning Commissions and the municipalities. The Counties administer the majority of the watershed area where land use can change from agriculture. Where not already in-place, efforts should be made to control the impact of construction on water quality. Adoption of the “State of Idaho Catalog of Storm Water Best Management Practices for Idaho Cities and Counties” along with stringent site grading requirements to mitigate erosion and sedimentation during construction have proven successful in other areas of the state. Site grading permits are subject to review by county engineers and other designated officials, and can be reviewed by interested agencies and the public during the formal review process. This provides a link between water quality management considerations and the review and approval process for new development.

An assessment of projected water quality impacts (both positive and negative) incorporated within the existing process for review of proposed new developments, would allow an equitable and effective distribution of the required pollutant reductions to all land uses. This incorporation of TMDL requirements, BMPs, mitigation, and reduction mechanisms as part of this review process will further assure the success of the SR-HC TMDL and specific implementation plans at a local level.

On a state level, permit applications submitted to IDEQ for new development within the watershed of an impaired water body will be evaluated as to potential water quality impacts, and will be reviewed with TMDL load and reduction allocations in mind.

Specific Implementation Plans

According to IDEQ guidance (IDEQ, 1999a), the specific implementation plans associated with the SR-HC TMDL are expected to be completed and on file at IDEQ within 18 months of EPA approval of the TMDL. This 18-month timeline includes the public comment period. These specific implementation plans will include detailed information on steps to be taken to meet pollutant targets as appropriate within the SR-HC TMDL reach, timelines for implementation, milestones and interim goals for implementation, and reasonable assurance that the plans will be implemented.

While each specific implementation plan process associated with the SR-HC TMDL and the inflowing tributaries will be different, the major steps in implementation plan development will be fairly consistent overall. A general overview of the State of Idaho implementation planning process has been laid out below.

This schedule assumes that either a WAG is already in place or the current public process (i.e. the SR-HC PAT, etc) will be appropriate and that the implementation plan will be reviewed by the BAG. If a new WAG is formed to develop the implementation plan, an additional early task should be to select and brief new members on the TMDL.

1. Work groups may be formed as appropriate representing identified sources. Work group members will be familiarized with the nonattainment issue and any available TMDL content proposals. The most effective organization will depend on the watershed. It is projected that source groups will be organized around similar land uses or source types (e.g., municipalities, agriculture, forestry) as appropriate. However, it is recognized that other organizational structures may make more sense.
2. Source load estimates from the TMDL will be refined as necessary. This will be especially applicable to inflowing tributary loads. Tributary load allocations will be identified at the mouth, therefore, the TMDL process in place for these drainages may need to assign loads to specific land uses or land areas within each drainage.
3. Measures to reduce pollutant loads will be identified, cost effectiveness of available pollutant control measures will be assessed as appropriate, and the amount of control necessary to achieve the TMDL goal will be determined. For point sources this will be identification of one or more control technologies that will achieve the wasteload allocation (WLA). For nonpoint sources this will be identification of best management practices (BMPs) and the amount needed (acres to be treated, miles of road to be treated, etc.) to implement the load allocation (LA).
4. A draft monitoring plan will be prepared.
5. A schedule with appropriate milestones and interim goals will be established. The approach for monitoring and responsibilities for tracking, managing and reporting on implementation progress will be identified.
6. Load reductions from all sources will be evaluated collectively to ensure TMDL targets are met (this step should be completed within 12 months of the TMDL approval to ensure sufficient time for public review and timely submission).
7. Estimate of control measures needed and associated load reductions will be refined if/as necessary to achieve TMDL targets.
8. Cost estimates for load reduction measures will be developed as appropriate.
9. A review of the draft document by the WAG (or other appropriate public stakeholder group), by IDEQ, and by other designated agencies will be completed.
10. Public review and comment period will be held.
11. The implementation plan will be revised and finalized using comments and review responses.
12. The final implementation plan will be submitted to IDEQ.

Idaho implementation plans will follow the TMDL schedule as identified for the State of Idaho. The following table identifies the currently scheduled completion dates for TMDLs related to the SR-HC TMDL.

Schedule for TMDLs related to the Snake River - Hells Canyon TMDL.

Location	Listed Pollutant (1998 303(d) list)	TMDL Due Date
Snake - American Falls to Milner (Lake Walcott TMDL)	DO, pest, sed	1999
Snake - Milner to King Hill (Mid-Snake and Upper-Snake Rock TMDLs)	amm, bac, DO, nut, Qalt, sed, temp, therm	1997, 2000
Snake - King Hill to Hwy 51 CJ Strike Reservoir	sed nut, pest	2004 2004, 2000
CJ Strike Dam to Castle Creek	sed	2002
Castle Creek to Swan Falls	sed	2002
Owyhee River	temp	1999
North Fork (TMDL completed)	temp	1999
South Fork (TMDL completed)	temp	1999
Middle Fork (TMDL completed)	temp	2006
Middle Fork	bac, chl a, DDT, Diel, DO, Hg,	2006
Lower	temp	
Mainstem Tribs	bac, sed, Qalt, temp	2001
Tribes	temp	1999
Tribes	temp, Hg	2006
Boise River	sed	2000
North Fork	sed	2000
South Fork	bac, nut, Qalt, sed, temp	1998*
Lower* (Lucky Peak to Snake River) (TMDL completed)	DO, nut, OG, sed, unk	2001, 2006
Tribes		
* Nutrient TMDL pending SR-HC TMDL allocations		
Malheur River		
Upper	bac, Qalt, temp	2003
Lower	bac, chl a, DDT, Diel	2003
Tribes	bac, chl a, temp	2003
Payette River		
North Fork	DO, nut, pH	1998, 2004
Middle Fork	temp	2003
Black Canyon Reservoir	nut, OG, sed	1999
Black Canyon Dam to Snake (TMDL completed)	bac, nut, temp	1999
Tribes	Halt, nut, Qalt, sed, temp	2003
Weiser River		
Tribes	bac, DO, nut, sed, temp	2003
	bac, nut, Qalt, sed, temp	2003, 2006
Burnt River and Tribes	chl a, Halt, Qalt, sed, temp	2005

Location	Listed Pollutant (1998 303(d) list)	TMDL Due Date
Powder River and Tribs	bac, DO, Qalt, sed, temp	2005
Pine Creek	temp	2005
Imnaha River	temp	2001
Tribes	Halt, temp	2001
Dennett Creek	Qalt, sed, temp	2001
Warm Springs Creek	nut, sed	2001
Hog Creek	nut, sed	2001
Scott Creek	nut, sed	2001
Divide Creek	sed	2005
Wolf Creek	sed	2005
Getta Creek	sed	2005

Key Elements of State of Idaho Source-Specific Implementation Plans

According to IDEQ June 8, 1999 guidance (IDEQ, 1999a), specific implementation plans prepared for the State of Idaho will include the following elements:

- key load reduction activities (e.g., permit modifications);
- responsible parties (either designated agencies or specific sources, where possible);
- anticipated or potential start and finish dates for activities;
- key milestones (to provide the basis and checkpoints for assessing implementation progress);
- time required for load reduction measures to reach maturity (to give a sense of individual measures' impact on reduction goals); and
- time required to reach water quality objectives (attainment with applicable water quality standards).

The specific implementation plans should also identify an individual who will oversee the schedule, monitor implementation progress, and determine when (if at all) the implementation plan and TMDL must be modified to reach water quality goals.

As stated earlier, the source-specific implementation plans will include detailed information on steps to be taken to meet pollutant targets as appropriate within the SR-HC TMDL reach, timelines for implementation, milestones and interim goals for implementation, and reasonable assurance that the plans will be implemented. Implementation plans to meet SR-HC TMDL load allocations for the inflowing tributaries will be completed and submitted according to their specific TMDL schedule. In the case of tributaries with TMDLs currently in place, the 18 month time period from the US EPA approval of the SR-HC TMDL will apply. In the case of tributaries where a tributary TMDL is scheduled to be completed following the submittal of the SR-HC TMDL, the implementation plan to meet load allocations from the SR-HC TMDL will be completed according to the tributary TMDL schedule. State-specific policy on timing of implementation submission will apply (i.e. State of Oregon tributary TMDLs will follow Oregon practice with implementation plan timing and State of Idaho tributary TMDLs will follow Idaho practice with implementation plan timing).

While each specific implementation plan process for the State of Idaho associated with the SR-HC TMDL and the inflowing tributaries will be different, the major steps in implementation plan development will be consistent with State of Idaho requirements as outlined above.

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